

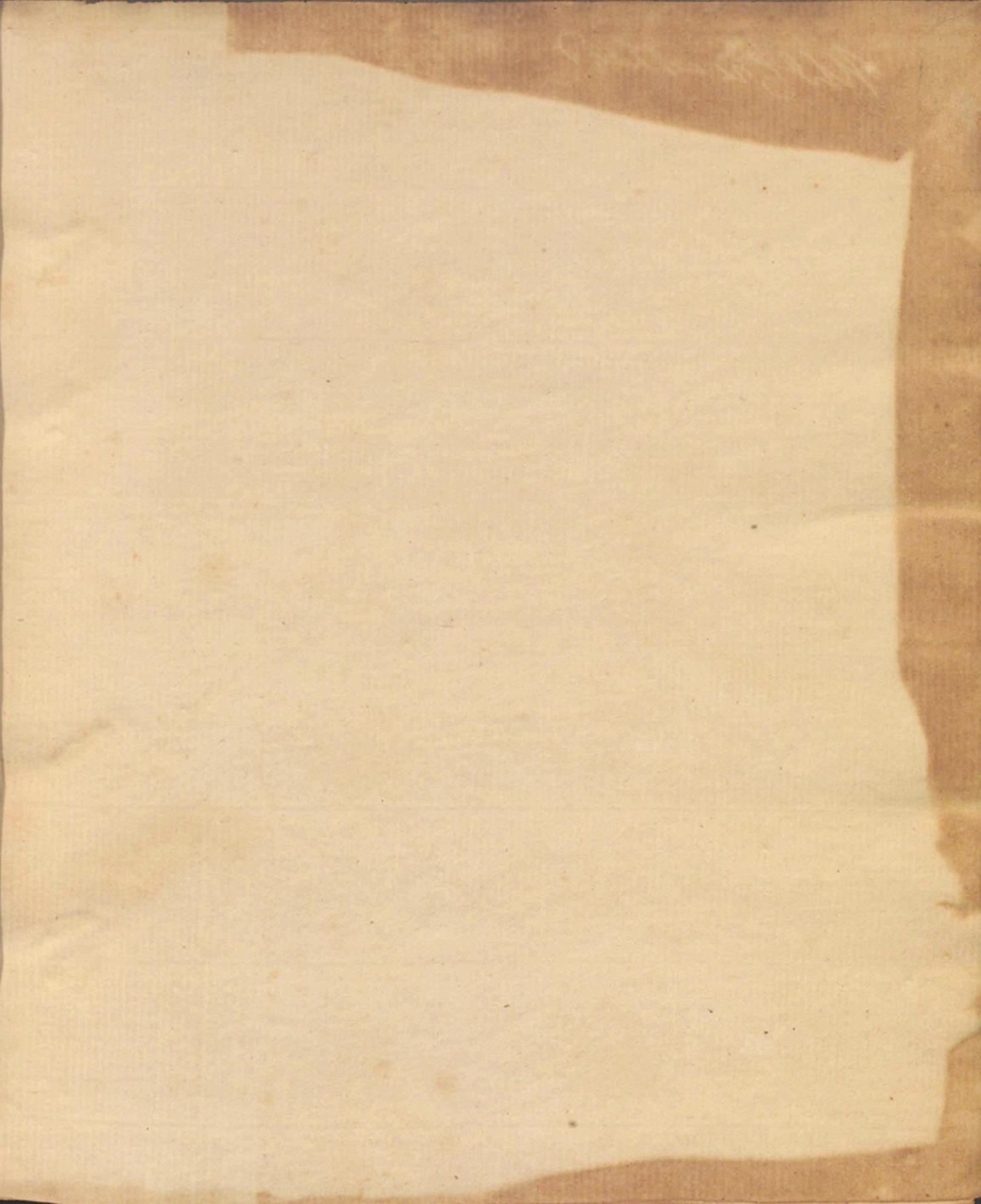
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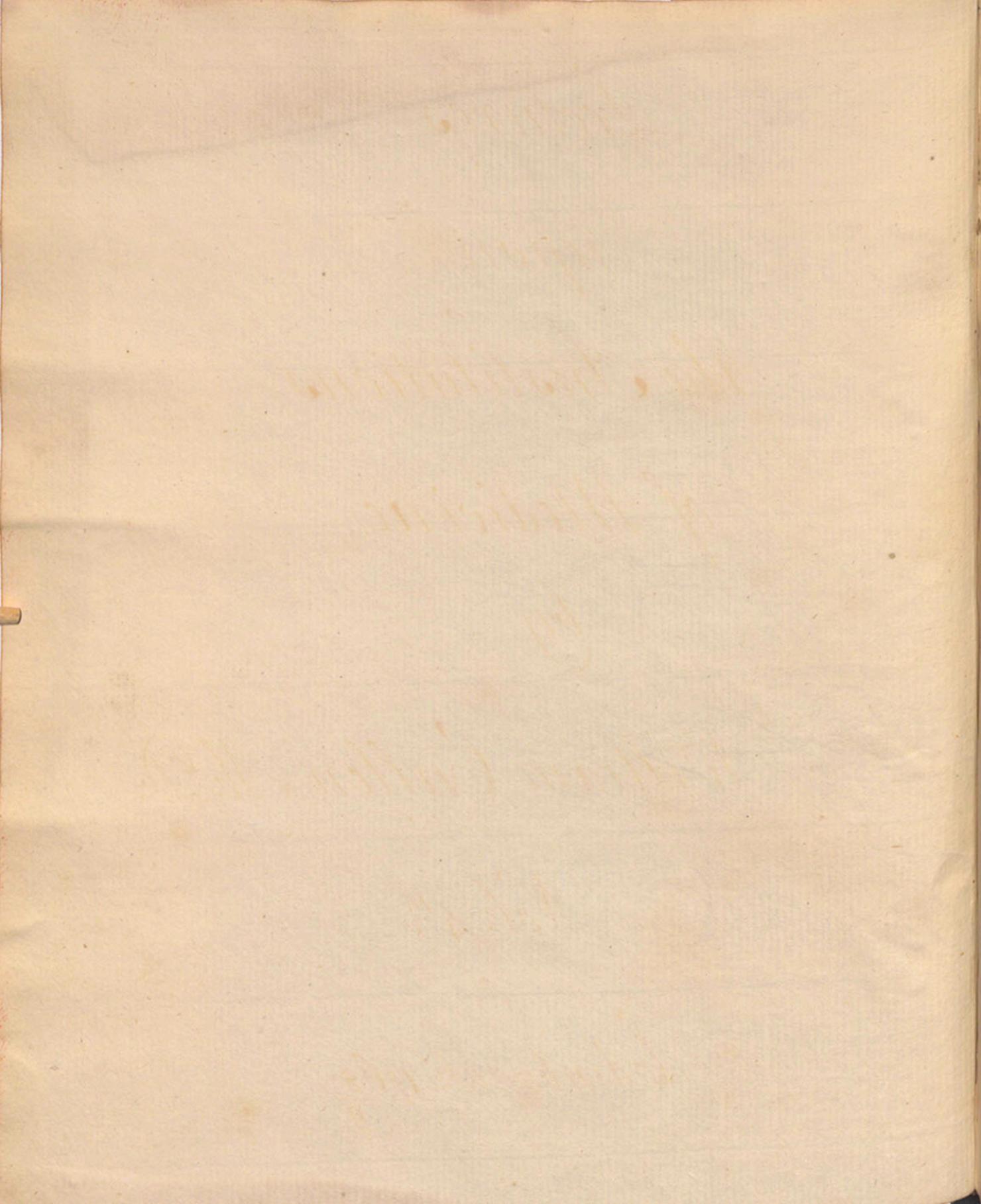


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Lectures
open
the foundations
of Ethics
by
William Godden



Lectures
upon
the Institutions
of Medicine
by

William Cullen M.D.

Vol: 4th.

Edinburgh 1768
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Gratia

Map

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Miniball, Va.



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De Disciplina Medica. Part 1 ad 2*h.*
Gaubii Pathol.

Vide Page 16 Gaubii Pathol.

The Institutions are there Divided into
1st That which treats of health or Physiology
2^d The condition of the Body in a morbid state,
or Pathology, under which the chief of the Sanioties are
contained.

3^d. The doctrine of Means whether pre-
serving Health or curing Diseases.

Pathology.

Lect. 1.

In this part we shall follow the Text of Dr. Gaubius, endeavouring to correct his Errors and supply his deficiencies. His Introduction does not strictly belong to Pathology. When in the beginning of our course we gave a different distribution of the parts of medicine, but we shall here stop to take notice of his distribution.

His first three Paragraphs contain nothing remarkable, but it must be observed he uses the term Nature in different Senses. In 4th, 5th & 6th Paragraphs he comes nearer to his subject, speaking of the Actions of the Mind, of the Body, & of external Bodies. It was not here necessary to distinguish between the Mind and the Body, and the manner in which it is done here tends to lead into Error, as supposing some power acting independant of the body. The whole of what he says then is, that in considering the Action of one body on another, we must consider not only the ^{nature} of the Agent, but also of the patient, and that the effects resulting depend in some measure on both. In ^{2d} Part. the first application of this, which

Par. 1 ad 34.

needs no comment.—(9) Come now to Laubius's definition of medicine which is not without its faults. It is sufficient to define by its effects without its means unless there is some other Art aiming at the same effect, by different means, we say then that Medicine is simply the knowledge of preserving Health and curing diseases. What he says of the ancient Physicians not attending to a Prophecy: lasciv seems a mistake.

In (10) he proceeds to the several parts of Medicine. In (11) besides the common condition he mentions also the particular condition of each person, on which subject Celsus speaks very particularly. As the number of particulars is so great, order is extremely necessary here, and that which he prefers is to distribute the parts as they respect Health or Sickness. One part ^{he calls} ΥΤΙΕΙΝΗ, the other ΙΑΤΡΙΚΗ.

We have next the division of the first of these in a very enlarged sense. This division is taken from Mr. Locke who proposes it in every Science. But I think if the φυσική be properly understood the next the οντοτική follows of course. The φυσική is divided in the same manner.

This Division is very specious but of no great use. The whole of the first part is confined merely to avoiding diseases which cannot be done but

Part. 1 dd 34.

HABITS & HABITAT

The bird is difficult to observe well from ground as it is
located in mountainous areas. However, you
can hear its mournful song in the mountains after sunrise. It
is a territorial bird, so it is often seen perched on a high
branch or rock. It is also seen flying over fields and
forests, especially in the early morning and late afternoon.

by knowledge of diseases. It is therefore better to take the whole of the sound State under the head of Physiology, that of Sickness under the head of Pathology, and the whole doctrine of Means under the 3d head of Sanctification. It may be said here the Semioticks are entirely neglected, but if the Physiology & Pathology are properly understood this follows of course. But farther we are not prepared for the Semioticks till we have a more complete Nosologia Methodica.

D^r. Gaubius adds that the chief foundation of medicine is placed in the Nature of man himself; there being something in the human Constitution, by which it often corrects its own deviations.

This is what is generally called Nature and has given rise to a multitude of disputes. We shall not at present discuss this point fully, but only give what we mean by the operations of Nature.

We do not imagine that the Human Soul, tho' constantly present, ever acts independantly of the body, but the whole is carried on by corresponding powers, which correct their own deviations, as happens in several Mechanical machines. Thus some means are provided within us whereby the parts mutually assist each other. But D^r. Gaubius rather imagines Nature something within us directing our actions and guarding us from dangers in

Par. 1 ad 34.

the same manner as a person who manages a ship directs it which way he pleases, even in opposition to Wind & Tide. Nature is therefore such a constitution of the human Economy as tends to correct all deviations. We observe something very Analogous to this in vegetables. The two surfaces of a leaf are different in their structure. For particular purposes one surface is exposed to the Upper Atmosphere, the other to the Earth. If the leaf is twisted so as to have its upper surface now lower & vice versa, it will restore itself to its former state if it can. If it cannot it turns again in another part and recovers its former state. In the same manner the wounds of Plants are healed, their morbid parts thrown off from their sound, & soon in many other respects.

The consideration of Nature taken in this light is really of the utmost consequence; but is pushed much too far by Dr. Gaubius.

It is the business of the Physician frequently to correct rather than follow Nature - Not certain too, whether he is right in supposing the practice of Medicine to be originally founded in Imitation of Nature. The proposition too *Medeci Naturæ Ministræ*, has at least done as much mischief as good. This is pushed to a ridiculous excess by the Stalhians. —

Dr

Par. 1 ad 31.

Cathologia Generalis. Par. 31 ad 53.

Dr Gaubius then proceeds to vindicate the Science from several Objections, which part we may pass over as having no immediate connection with Pathology.

Pathologia. page 11.

Dr Gaubius next comes to speak of Pathology more particularly, but uses several terms which cannot be explained at present. He uses the term Pathologia &c. generalis for what relates to the general plan of the subject, different from other Pathologists.

Diseases, with their causes &c, are undoubtedly the chief part of Pathology. Such an Introduction as here used is very useful, as nothing leads into more Obscurity of Science than confusion of terms. Precision in the use of Terms is what we last arrive at, and is the effect only of great perfection in Science. It is probable then that the first terms are not proper, and yet we too readily adhere to them, and enquire rather what has been said than what ought to be said. We shall rather follow the last plan. Our language is chiefly got from Galen, and his false distinctions still adhered to. —

De

Par. 31, & 53.

6.

De naturâ Morbi. page 12.

The meaning of the term Morbus must be the foundation of every other in Pathology. It has been employed in two Senses

- I. A concourse of Symptoms or apparent Lesions of various parts of the System. This is the most obvious.
- II. That state of the body known or supposed on which these Lesions depend. This is the sense in which it is used by Gaubius - but the first Physicians took it in the former & most obvious sense, and some Physicians even now prefer it: Gaubius himself, tho' he has adhered to the Systematic writers in his definition, is of another opinion as appears from other parts of his works vide Par. 836, 837, 88, 857, 117. He gives us his Apology in Par. 11. for still adhering to the Rules of the Schools; but with regard to the confusion of Cause & Effect we do not see that it is likely to arise.

Every thing in nature is a series of links connected together, and it makes no difference whether we call the preceding link a cause, or the following one an effect. Tho' we consider diseases as apparent Lesions, this doth not preclude us from enquiring into their causes. In Par. 85. he prosecutes this matter farther, but the reasons he there adduces may rather be urged against him. Neither doth our definition of disease exclude the term Symptom.

Sar. 34 ad 53.

7.

as we shall show in another place, and which may be considered as parts of the whole. By this defining diseases from their apparent symptoms we avoid all danger of error. Thus for instance in the Pleuritis. If we define it by the symptoms, there is no danger of such a definition being called in question; but if we attempt to define it from the supposed state of the body at that time, it appears from surveys what a number of errors we might fall into.

It is necessary in our definition to add, that it is independant of external Impediments & depends on the Body itself. It is sufficient to carry this along with us in our notion of disease. Dr. Gaddius next comes to limit the term, and confines it to diseases of the Body, tho' he allows that affections of the Mind may give rise to diseases of the body. Nay he even seems to go farther in his 39 & 52 Par.

There is some difficulty in fixing this point. If there are affections or diseases of the mind absolutely independant of the body, as some Pathologists think, these we have nothing to do with. But of the others; the operations of Perception as separate both from Impression and Contraction are what we call thought; of these there are a great number of Deviations into various

Par. 31. &c 53.

8.

various degrees of Folly and vice, to which our Physiology doth not extend. Even tho' we allow Memory to depend on Mechanism yet as it by no means reduced to any rule, we cannot consider its defects or diseases. We may then reject all these Observations of the Mind which seem consistent with our business & way of life, and which are to be corrected by words and not by Medicines.

On the contrary all those Observations which are inconsistent with our common business of life are to be looked upon as diseases. Further all affections of the Mind may be looked upon as remote causes of diseases.

Dr Gauvius introduces here his Principia magis a Morbo distinction of which we have spoke before. But may oppose to this the Authority of Boerhaave who asserts that a certain state of the Mind must necessarily follow a determinate State of the body; if this be true we need only to consider the state of the Body, in Medicine, and attend to the Mind only as connected evidently with this state.

Gauvius next distinguishes Turpitudines from diseases, by which he means certain deviations in the Internal Structure of Parts, without giving any apparent impediments of the Functions

Par. 31. ad 53.

* If they are such as the Economy for mature restores
of itself & are transitory they are not to be looked
upon as Diseases.

(a) In another place he defines Disease to be
every Deviation from such a state of health as is
ordinary to the Species or Individual, apparent
either to the Patient or Physician, uneasy, per-
manent, & dangerous.

9.

Functions. This further touched on in 123 & 267

Par. - These are excluded in our definition, & if we admit Hanbuc's we must add something to it to exclude them. The Qualitates sensibiles latae, and Excretorum vicia are two of the parts into which Symptoms are divided, and are these Surpitudines or vicia. Whether these are to be considered as diseases or not is perhaps a discretionary matter, depending on the degree of uneasiness they give, and the possibility of removing them.

We must here make an observation with regard to Sauvages, who refuses to allow negative Symptoms; but his reasoning is by no means just, and we must necessarily admit them with Linnaeus & other Physiologists.

Hanbuc next proceeds to another very considerable distinction of diseases, viz, with regard to the Latitudo Sanitatis. But there must necessarily be certain deviations from any standard of health in our System, nor can we compare one man to another in this respect. But even in the same man at different times there are considerable differences & deviations from his most perfect state of health, which yet cannot be looked upon as diseases.* We can now give our ^(a) definition of disease more fully, which we say is an evident, uneasy, durable lesion of the functions depending

28. ad 52.

Par. 53 ad 80.—

10.

on something in the Body itself. This limits diseases in every part of the distinctions herein entered into.

Gaubius next lays down some rules with regard to the conduct of our Reasoning, in investigating the nature of diseases; but these are only general ones & may be passed over. But he uses expressions here which are only compatible with the Stahlian System. We positively refuse that there are Molimina Spontanea, nec Cause morbi, nec Remediis adhibitis, attribuenda; and therefore deny his conclusion Medicis Natura minister, and that the whole of the Practice of Physic depends upon an imitation of nature. Even Gaubius himself is obliged to limit this afterward, and says that it doth not hold universally in all diseases. We say that the power of Nature as we have explained it before, takes place in some diseases only, and that there is no occasion to limit ourselves to an exact imitation of this power, tho' it merits our attentive consideration.

De Causâ Morbi. Page 22 ad 31.

We now proceed to speak of the causes of diseases. Dr. Gaubius might have omitted his proposition that every disease must have a cause; and his definition

(a) This term is not to be extended beyond those causes that act immediately on the human body; Other causes may modify the action of these causes but the consideration of these doth not belong to Medicine: Thus the action of the Wind acts as a remote cause on the human Body, but the cause of its blowing from this or that quarter is a point of Philosophy not Medicine.

11.

definition of cause might be supposed to be understood. A cause is that which is strictly connected with the presence of a thing. Besides these causes there are others, Principia,^(a) which imply the Possibility of the Presence of any thing. In investigating causes he observes justly that this enquiry may be carried to a degree of Trivialness, and that it requires some limits. To a knowledge of the first Physical causes are not requisite, nor are these nice distinctions of causes at all necessary. Of the causes of Schoolmen we have retained only the efficient in physick. In ascertaining the proper division of causes, Dr. Gaubius has rather enquired what has been done this way, than what ought to be done: we shall therefore drop him a little and follow our own course.—

The cause of a disease is, Status ille hominis quo fit, ut naturales hominis actiones rite exerceri non possint.

A disease itself is, Status ille hominis in quo, naturales hominis actiones non excentur.

This distinction is simple, obvious, & easily applicable in every case; but if we take Gaubius's definition it is very difficult to distinguish them sometimes. This state of the body which we call a causa proxima, is a link in the chain of cause

Par. 53 ad 80.

12.

and Effect, and must therefore have also a cause. But of those causes we must consider those that imply the Actuality rather than the Possibility of the presence of the disease - Hence the distinction into Proximate and Remote causes. To avoid ambiguity we might call these Principia. This term is not to be extended beyond these causes that act immediately on the Human body; other causes may modify the action of these causes, but the consideration of them doth not belong to Medicine. Thus the Action of the wind acts as a remote cause on the human body; but the cause of its blowing from this or that quarter is a point of Philosophy not Medicine. This is the fundamental distinction, and every other is either subdividing these, or substituting different terms for them. Gæbino shd therefore have begun with this & proceeded afterwards to the other divisions; but he has followed the other method which is owing to his false definition of disease at first.

He is himself apprised of the great importance of this fundamental distinction, and that the proximate cause deserves our chief Consideration. He seems too in the 67. Par. to take the Causa Proxima in the same sense with us; but he is always embarrassed in speaking of it in

Par. 53 ad 80.

consequence of his definition of disease).

Boerhaave in defining disease & the Proximate Cause in the same manner as Gaubius does, is obliged to own, that the Proximate Cause is much the same as the disease. Indeed all the Systematics in speaking of Proximate causes are obliged to slide into our notion of disease, tho' in speaking of Remote causes they retain their own.

To proceed now to the Subdivision of Remote Causes. The principal is of Praedispensing and Occasional causes. The first of these is improper but has been so long retained that we dare not alter it. Every Effect produced depends partly on the power of the Agent; partly on the Nature of the Subject. Whatever then fits any Individual to be acted upon by particular Agents, and these only which do not act on others, the same is a Praedispensation; and when an Agent is fitted to act on particular predispositions, this is an Occasional cause. Gaubius substitutes the term Seminiuum for praedispensation; and Potentia receives either for Occasional causes, or for remote causes in general. The inaccuracy of Gaubius in this respect may be found in the 666. Par. where he is talking of Seminium Naturale; some of these he says are common and inseparable from

14.

from human nature; others proper to Individ:
uals. But the first of these are in the language
of the Mathematicians always given, and there-
fore may be admitted in our Consideration, since
they do not modify the disease at all, or furnish
any Indication of Cure, the whole here depending
on the power of the external Agent. We define
prædisposition to be a particular state in an
Individual, fitting him to be acted upon by particu-
lar Agents; which takes away the necessity
of a Seminium commune.

But I must confess there is some difficulty in
apply this doctrine in all cases: thus, if 90 out
of 100 are affected by any external cause, we
cannot think here of a Seminium proprium. In
the whole what acts on the Subject universally is
not to be called an Occasional Cause. This then
is to be called simply a Remote Cause. Thus the
Contagion giving a Clap acts upon the Seminium
commune, & those who escape it do it by some
power of resistance. Accordingly Laubies very
properly observes, Occasio Prædispositio solummo-
do nocet. So the terms prædisposing & occasional
only proper when used as Relatives to each other.

We proceed next to observe another distinction
of Laubies into Internal & External Causes. — There
is

Par. 53. ad. 80.

There is no occasion for this distinction, and Gaubius in this very Paragraph (58) uses the term Internal cause in two different Senses -
1^o As predisposing cause. 2^o As

Must now observe that sometimes there is some difficulty in ascertaining the causa Proxima, as whether it is simple or complex. An Ophthalmia may be produced by an increased Impetus of the vessels; but may also be produced by a Relaxation of these vessels. Gaubius rightly observes that such a complex proximate cause must be resolved into its simple parts. But he speaks of such a complex Proximate cause, as consisting of several Remote causes which is not our meaning. In Hæmoptoe the most common cause is a rupture of the vessels in the lungs; we must still look for the causes of this rupture, as perhaps too violent exercise, or increased Impetus. But this increased Impetus may depend on Plethora, and this may be owing to a suppression of usual evacuations. So the causa Proxima contains every condition of the Body which has a tendency to produce the several Phænomena. Therefore tho' we say that the Rupture of the vessel is the Proximate cause, yet all the other

(i) 91 - ad - 119

other more remote causes mentioned, must be considered as parts of the Proximate cause. Hence Boerhaave's definition of the Proximate cause is just. The causa Proxima taken in this comprehensive sense removes a confusion that we might otherwise fall into by supposing that Proximate and Remote causes are always in opposition to each other, and that a Remote can never become a Proximate cause. The Mobility of the Nervous System is at first a Predisposition, but also an Occasional cause concurring and producing Epilepsy, if that mobility continues it must be looked upon as part of the Proximate cause. But even many of the occasional and simply remote causes, if they continue after the disease is produced, & contribute to the symptoms of the disease, must be considered as part of the Proximate cause, since they give us an Indication we must attempt to remove.

A disease has its cause, which should be only the Proximate cause. This has its Principium, which is a remote cause. This may be either simple or compound, and in this last case we may use Predisposing and occasional. We would here introduce two new terms, Principium transiens, & permanens. The principium transiens is that which passes away as soon as it has produced

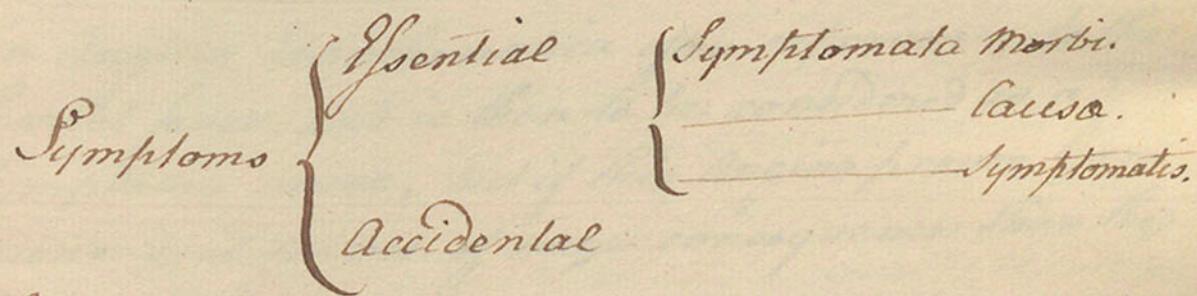
Par. 81. ad 119.

produced its effect. The Principium permanens 17.
is that which still remains and forms a part
of the Causa Proxima.

De Symptome. Pages 31 ad 52.

There is no occasion for any great anxiety in settling the term Symptom: It is by use now confined to morbid appearances, tho' probably equally applicable to that of Health. Of Laubus's definition we only admit of the first part, and therefore too by Morbus we must understand Causa Proxima Morbi. The term Tentes Symptomatum is rather ambiguous.

His division of Symptoms, which is the same as every other Systematic Author, is as follows,



Sympotoma Morbi - est
----- cause - est
----- Symptomatis est - when there is such a
series of external Symptoms as we observe before
of causes in the Causa Proxima.

Schattengrafik

Of these the Symptomata Morbi are what properly constitute the disease and chiefly merit our consideration. To illustrate this division. Plethora is often the cause of Epilepsy, and in such fits an Haemorrhagia Nervium is frequent, which is not a Symptomata morbi, but a Symptoma cause. It must be observed however that Physicians have not always adhered to this distinction, but have confounded the Symptomata cause & Symptomata Morbi together. The Symptomata cause are frequently not symptoms but one disease superadded on another. These then may remain after the Primary diseases are gone; and are then to be considered as a separate disease. Thus if both Catarrh and Rheumatism arise from cold, if this last is slight we do not consider it as a disease but as a Symptoma cause. In the same manner an Angina Exanthematica often supervenes to the Scarlet fever, and is then to be considered as a Symptoma cause; but if this Angina proves dangerous, it proves of more consequence than the Primary disease.

Symp^ttoma Symptomatis may arise from either of the former. Thus in Catarrh, if in consequence of the cough an Haemoptoe ensue, this is a Symp^ttoma Symptomatis. In the Asthma too the Patient

Par. 81. ad 119.

is oft obliged to sit for a long time in an erect posture, which is apt to produce swellings in the Legs, and this must be considered as a symptoma:ma Symptomatis. —

These Symptomata Symptomatum have a very intimate connection with the Symptomata cause Proximæ, and tend much to explain both their nature & degree. Dr Gauviers adds that these may remain after the disease is gone; such a disease having induced a particular state of the body that continues after the disease is gone. Thus Phthisis Pulmonalis often follows the Measles; Ophthalmia the Small pox, &c. —

Besides these Gauviers gives another division of Symptoms taken from the effects of the Vires Naturæ Medicatrices, of which we have spoken before. These he says are not to be imputed to the causes of the disease. But in opposition to this we find that in the case of an Abscess, this is a salutary tendency, but it has a reference to the sine &c. of the extraneous body producing the Abscess. These Molimina Naturæ are equally immediate consequences of the causes of the disease, and are to be distinguished from other Symptoms only by their Tendency; in which respect they may be very justly distinguished. The Sucha Naturæ cum Morbo, and other things of that kind lead us only

per se und entweder auf dem Lande vertheilt
und dann auf jedem dieser Gemarkungen ein
civiles oder militärisches Amt eingesetzt. Einzelne
Städte und Ortschaften dagegen sind keinem
Gouvernement unterstellt und haben die Verwaltung
der ihnen zugehörigen Städte und Dörfer in
ihrem Inneren selbst zu regieren. Einzelne
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to a metaphorical Language, which is apt to deceive us. But tho' Gaubius inclines here to the notion of the Stahlians, he doth not go their whole length, but points out the bad consequences of an adherence to their System in that respect.

He next proceeds to this 3^d. sort of Symptoms which he calls Accidental. A sick person is exposed as well as a healthy one to various accidents, wh^{ch} may be differently modified by the present disease, and will oft have a great effect on the disease, either aggravating it or perhaps changing it entirely. These are called by Physicians the *Exyriopœva*; tho' Gaubius endeavours to limit this term to the *Symptomata Activa*, or *Molimina Natura*, but seemingly without reason.

These Symptoms have not at all an equal weight or importance, hence arises another division of Symptoms into the *Necessaria* & *Non necessaria*. The *Necessaria* are such as are immediately connected with the Proximate cause, and so are to be distinguished both from the Accidental Symptoms, *Symptomata causæ*, & *Symptomata Symptomatis*. What are properly the *Non necessaria* is not very easy to say. We may lay down some general Rules on the subject, but it will not be easy to apply them in every particular instance.

There

Par. 81 ad 119.

Contra in nos. In illo liberabilitate, ut in eis labor
deus dicitur, nescire de rebus exterioribus non est. Etiam in
conscientia nostra illi per hanc libetatem liberabilitatem non
est ignoratio, sed certe.

Par. 120. ad 130.

Conscientia nostra in certis rebus non est
ignoratio, sed certe. Hoc est in nobis illi liberabilitate, ut
dicitur, nescire de rebus exterioribus non est. Etiam in
conscientia nostra illi per hanc libetatem liberabilitatem non
est ignoratio, sed certe.

There is still another Subdivision of Symptomata Necessaria into such as appear from the very beginning, and subsist in the same form during the whole course of the disease, & others that occur in particular periods.

Pathologia Specialis.

Having now finished the Pathologia generalis, we shall touch upon the distinction of Generalis & Particularis, which Gaubius seems to have introduced in an improper place.

He divides it into 4 parts at first; the Nature, Differences, Causes, & Effects of Diseases; but differences constitute a part of their nature; so on: by divided into 3 parts. It will be proper undoubt:edly in this division to treat of the causa proxima, but if Dr. Gaubius has done it at all it is under the nature of diseases.

The Pathology is undoubtedly a part of a dogmatic system which is chiefly investigated by a know: ledge of the Proximate cause! It must treat,

I. Of the Causa Proxima, or, as Gaubius calls it, Nature of diseases.

II. Of the principles of Diseases, which are the Seminaria & Potentia Novicia of Gaubius —

Par. 120. ad 130.

Par. 125, ad 130.

III. Of the Symptomata — considered as effects, of the causa proxima; but as diseases consist in a concourse of different Symptoms, so the causa proxima often consists of a concourse of Series of different conditions of the body; each of these conditions then are to be considered separately as far as they can.

These abstract considerations are what Gaubius treats of under the title of Morbi Simpliciores; but, will be better to consider these not as diseases, but as parts of the causa proxima, and to call them rather affectus simpliciores, by which term even Gaubius calls them in another place.

The three first parts then of Pathology according to Gaubius depends on these affectus simpliciores. But there is occasion for a 4th. part to which the morbi compositi may be referred. Dr Gaubius is aware of this, and gives another more complete division, first of the affectus simpliciores, then of the affectus compositi. But unluckily there he touches them only as accidental differences, whereas here he introduces differences constituting different genera & species.

We are then first to consider the affectus simpliciores, according to the meaning we have assigned to the term —

The

Par. 125. ad 130.

Par. 130. ad 130.

The first division of these is into the *Contenta* and *Continentia*, or *Fluids & Solids*; the *Solids* are divided into the *Simplicia & tiva*, and those again into the *Organica & Inorganica*.

Before entering upon the *Solida Simplicia* Gaubius promises

Analysis Chemica generalis corporis humani.

This is Gaubius's account of the Chemical Analysis of the Animal Mict: This seems scarcely proper here and I think (pace Tanti viri) very ill executed. The whole we can discern of the mixture of animal micts is this, that it introduces more or less water into its composition, and that the difference of parts depends on the different proportions of water in them. What Gaubius says appears to be without foundation, and even supposing it true doth not admit of application: We shall offer a very simple system on this subject.

The System I have to offer you, Gentlemen, is a very simple one. In the first place I shall begin with delivering some general propositions the Truth of which we have not time to prove in detail.

(We begin with supposing that in Nature there are)

are properly only two kinds of Matter. One
Atoms, or solid indivisible Bodies, of one fi:
gure & one size uniformly. The other is a sub:
tile Plastic fluid, by which every Atom is
surrounded as by an Atmosphere. The Atoms
we consider as mists, and their only Influence
to be to modify their surrounding atmosphere.
But this we confine to one circumstance, that
a certain Continuity in any two Atoms diminish:
es the Plasticity of the Ether interposed between
them, and therefore increases it in the parts left
more free.

Admitting this & we can explain attraction,
for it consists in two atoms in such contiguity
that the Ether without them is of greater den:
sity than their peculiar surrounding Ether, by
which means they are pressed together. All the
properties that we can discern in Bodies are
to be referred to the two heads, modes of attrac:
tion, and modes of cohesion. For they are all
either properties of aggregates which consist in
modes of cohesion, or of mists which are either
to be referred to cohesion or attraction. This shewz
how very important the proposition delivered
above is; but cohesion & attraction are greatly
diversified. This we imagine depends on the
different

is much more easily set fully round than
smaller and less difficult one part however will
not fit well here when it comes to
make up the whole and when it is
joined with the other parts it will be
seen that all the corners correspond here well

and all angles are made with equal
easier done with ease and no skill is re-
quired to make them well all the
parts of the frame will now be
well enough being well made and done
they will be made now how best it can be
and the whole shall be all in
one and will be made by Robert Lee, and
in time after I hope to make another
frame so that there may be two to choose
between them which is made by Robert Lee, and
another made by me which is made by me

different Arrangement of Atoms applied to each other. 25.

The Atoms in their first Concretion cannot be applied at random, but will be united so as given numbers are round a centre. The possible combinations round a centre are only 6, viz, the Sphere, & 5 regular Solids. In these combinations there must be a different state of atoms & other, and consequently a different force of attraction. The effects of the different degrees of density of other giving different degrees of attraction are not yet sufficiently ascertained to allow us to be more particular on this head. In these combinations there must be a different state of atoms & other, & consequently a different force of attraction. The effects of the different degrees of density, of other giving different degrees of attraction are not yet sufficiently ascertained, to allow us to be more particular on this head. In the next place every view of nature leads us to believe, that from those Atoms to the organic matter we see there are constant series & degrees, before we arrive at those higher degrees of composition with which we are chiefly conversant.

But it has been supposed that these compounds consist

consist of Elementary parts of the same nature) 26.
with the compound and giving it its properties.
But the Supposition of such Chemical Elements,
is unnecessary & further is contradicted by the
whole Phenomena of Nature).

The most simple combination we see is Adhe-
sion in which the Body suffers no change in its
properties. The next degree of combination is Solu-
tion in which the Body suffers little change ex-
cept in Aggregation. But in Mixture we find no
Body Professed of the same properties with its
ingredients, which overturns the Chemical Doctrine
of Elementary parts. But because we can decom-
pose this mixt & recover the former Ingredients
we suppose that the Ingredients contribute to the
Properties of the Compound.

Both Corpuscularians & Chemists have run into
a kind of middle System, supposing that we can by
Decomposition obtain the constituent parts of the
Compound, whereas we can do it only in a few
instances. It is true that we know a little of the
constituent parts of Salts, less of Inflammables, but
scarcely any thing at all of other Matters. Neither
do we know any thing more of the constituent
parts of Animal or Vegetable Matter, than of Metals,
Earths &c We find all matters presented to us in
one)

Par. 130. ad 150.

X He says that the difference of Structure in our Body depends on the different proportions of these Matters, viz his humidum & siccum. But — &c

^{and, as Animals or Vegetable Matter resolve into one or other of these forms,}
one or other of the six general forms; ^{they are sup:} 27.
posed to be of the same nature. But we know nei:
ther the proportions of these parts nor from the pro:
portions can we judge of the qualities. Many bo:
dies in Resolution resolve themselves into a dif:
ferent form from what they had before. The same
too happens in Combination; so that two bodies
neither of which were inflammable, may on combi:
nation become Inflammable.

We can in very few instances say what are the con:
stituent parts of Bodies Matter. Thus in Animal &
Vegetable Matters we can by a little variety in the ^{che-}
^{rical} treatment of them, obtain a different resolution. Neither
has this ever yet led us to discover the particular
properties of any one vegetable. So imperfect is our
method of Philosophising, and such Dablers as yet
are we in true Science.

After this general discussion we shall make
only a few strictures on particular passages in
Gaubius. *

The Humidum & Seccum is not a fundamental dis:
tinction of Matter, but depends on the mode of Aggre:
gation, and the combination of two bodies will
give a difference in this respect. He says that the
different structure in our Bodies depends on the
different

28.

different proportion of these matters. This as a general proposition is by no means applicable; nor is the Siccum in particular a fundamental matter or consists of the Species Siccii mentioned hereafter. Siccum, says he, coherentius est, which seems to me no more than to say coherent Bodies are more coherent. But the presumption in this respect, when we ascend to the more simple parts of matter lies rather in favour of the fluid. Diamonds, the most coherent bodies, appear to have been formed from a fluid. In very firm cohesion too, as in Neutral Salts, a fluid matter still continues. With regard to the Siccum Inertieis we know of no activity in matter, except a disposition to be united to another Body. Fluidity indeed favours this, but fluidity is not exclusive of any kind of matter. We would refuse too, Siccum calore aquies diffundum for a general proposition. Thus the Θ is far more volatile than water, tho' a dry body. So that the whole of it is this, that what remains after dissipation is found in coherent mass, which doth not at all referr to the original parts of this matter. Gauviers next ventures to give a threefold division. But if such a division of Elementary Bodies is to be admitted at all, why is Air excluded? It may be asked too whether Air is humid or dry? It seems to be the foundation of Fluidity in Water, and

of consistency in Earths sometimes, which is 29.
very opposite to the chemical notion of Elementary
parts. In prosecuting this division almost every
part of it is contradicted by facts, and is both with-
out foundation & application. What he says of Gluten
is the same doctrine we criticized in Haller.

From this System he supposes he derives the man-
ner of our Nutrition. But several Solids contain
all the Elements he mentions here, which yet are
not found nutritious. Why is not Nitre equally Nu-
tritious with Sugar?

Another Application he proposes is to explain
the nature of Putrefaction, but it doth not advance
the least step towards explaining the principal
Phænomena belonging to it. For how will it
explain that Solution of Air which seems so abso-
lutely necessary to that process? On the whole,
Dr Haubus reasoning on this head is absurd, and
serves only to point out the defects of the chemical
doctrine of the particular Elementary parts
of Bodies.

Morbi

Morbi part. Sol. Simpliciss. Page 63. Par. 150.

We come now to speak of the several Simple affections of the Human body, in which either singly or in concourse the proximate cause of diseases consists. We begin with considering the affections of the simple solid, & this, with Gambus, we call *Linea prima pathologica*. He begins with considering it as different from fluid. This depends on cohesion for the several matters of which they are composed are quite the same & different only in proportion.

The most simple affections then of a Solid, are such as affect its cohesion. This train of thinking of his is not just, for our simple solids may be considered in their Aggregation, cohesion, or mixture: but so far alone as they serve some function of the body, is their cohesion to be considered. The modes of cohesion oft lie in the Elements themselves, and therefore he is too general in saying that such consideration is not at all necessary. But we shall begin with the affection of cohesion.

Cohesion, says he, may be faulty in defect or excess. This Consideration leads only to the force of cohesion; but there are many other modes necessary to be considered. He accordingly premises, that all these are to be considered as relative only. He first considers the several species of morbid affections,

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then their causes.

In his definition of Debile, he seems to confound the Laxum with the Debile, & want of Elasticity with both. Gold & Lead are both soft bodies; but Lead is weak in point of cohesion, Gold is strong. Gold too differs more from Iron in Elasticity than lead doth. Debile is confined more properly by Boerhaave to the force of cohesion.

We should chuse to distinguish the species in another manner. Parts of the human body distinguished as Hard & Soft. In Soft parts three morbid affections to be noted. 1.^d Debile, which respects the force of cohesion. 2.^d Laxity, when too flexible & yields too much, the cohesion still remaining entire.— 3.^d where with Laxity it wants Elasticity. To the first of these, no morbid affection in the system is opposed; and only fault in excess when joined with the opposite to Laxity, Rigidum. There may be an excess of Elasticity too, but this very seldom occurs in Animal fibres. So on the one hand these three already mentioned, and the Rigidum on the other are morbid affections of soft parts.

In Hard parts, we find these morbid affections, viz, 1.^d Fragile, but this may be with a force of cohesion so as to oppose contraction, yet very readily yield to percussion. We may consider it in soft Iron

and just as many as I did in 150-169.

Iron and Steel, which do not differ much in cohesion but greatly in their disposition to break on Percussion.

Dr. Gaubius also mentions a disposition to break, depending on certain inequalities in Prostosis, which belongs to Robustum.

But besides these relative modes there is the absolutely Hard & Soft. Thus, softness in the Bones, in whatever degree, is a morbid affection.

To consider them now in Dr. Gaubius's terms. He subdivides debile into two genera, the first of which he again subdivides into Laxum, Iners, & Flexiles. He takes Laxum differently from Dr. Boerhaave, and it is to be separated from the Flaccidum, & he referred only to Flexibility with Elasticity. This instance here is not very happy as it regards organic fibres. To these degrees of Laxity he adds the absolute softness. — His second genus of Debile is what he considers as the Sole Debile. — His first species is a Seminium & not a Morbid affection, except when existing in particular parts, and not in the whole System. His Tabidum respects Putrefaction only; but this is improper, and we want a proper general term to express that variety of mixture diminishing the force of Cohesion. This contradicts what Gaubius set out with, that the consideration of the State of Mixture was not necessary to Pathology.

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logy. He next distinguishes between Fissiles & Fragile; but doth this by their manner of breaking longitudinally or transverse. Bodies shrink in their Bulk as their humidity exhales. If their adhesion then to surrounding Bodies is greater than of their parts to each other, this is one of the Foundations of the Fissile - Another from unequal Exhalation, as in humid clay - A 3^d where the parts are of a particular structure and the Force of cohesion is different; as happens in Wood where the cohesion is greater longitudinally than transversely - Gaubius confines himself to this, but we think no such takes place in human bodies. The Fissures that occur there are chiefly in the Epidermis or Epithel where there is no such fibrous arrangement. There is one singular fact with regard to Fissures in the human body that they observe a particular direction. In case of Reunion after a wound, the substance is less firm than it was originally; hence old Ulcers are apt to break out again in the Scurvy. (vide Lord Anson's voyage.)

The Fragile here is not to be considered as always in consequence of Irosion. But this is to be opposed to the proper Fragile, as Tenerim is to Fabidum. We abstain from the causes of this before

before we have mentioned the species of Rigidum—
As he uses the term Rigidum for all these three species, he is obliged to invent the new term Senax, which is the same as the Rigidum of Boerhaave. The Durum is the absolute hardness spoke of. Whether a Fragile vitrum can occur in Animal bodies is uncertain.
By age they grow more vitreous, but we doubt whether they ever arrives at the state here spoke of.
We doubt the fact *Ossa siem fragiliora; fortis;*
probable at this time the Bones continue much the same, the sudden falls, Tension of muscles, hardness of ground will fully account for accidents.

(We have given over the leaf a Table of our Doctrine)

Tabula

An Explanation of the Table.

In the first place there may be a faultiness in absolute qualities, which are Durum in Mollibus & Flexible in Opibus. The others are only relative & ought to consider these separately as in the soft or hard parts. The Defects of Cohesion in the soft parts are the Debole laxum & flaccidum. The first of these admits of a subdivision as depending on the gracity of the fibre which is the Tonorum of Gauvius & the state of the matrix which Gauvius improppriely calls Tabidum.

On the other side the only excess is Rigidum. In the hard parts the defect of cohesion gives the Fragile Spongiosum, the excess of it the Fragile Vitreum.

We have omitted here only the Term Fibile, which is sometimes to be referred to Fragile spongiosum, sometimes to Fragile vitreum.

Jabuza

qua effectus Partium solidarum simplicissimi exponuntur.

Chassonius

Defectus

Absolute Relative

Hælib in Gliberugubis (In part. moll.

In part. dur.

fragile spines.

Doblo laevum & fuscum

Tenuum Sabidum *

Exclus.

Absolute Relative

In part. moll. In part. dur.

Rigidum. Fragilis extrem.

* This property belongs to the state of the Animal mixt, & not to the 3rd
generation of the Simple State.

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We now come to consider the causes that may affect simple Solids, either considered as simple fibre or as a more organic structure. This consideration may be referred to 2 heads.

- I. The Matter of the Fibre.
- II. This Matter given, circumstances that affect the motion of its parts on each other.

The causes affecting affecting the matter of the simple Solid are those affecting the humidum & the siccum; for the conditions of the Solid differ according to the different proportion of these. Thus if the water is in greater proportion it gives, 1^d A weak cohesion. 2^d A greater laxity. 3^d From want of elasticity in water more laxity.

If we diminish the proportion of water still preserving the laxity, the elasticity may be increased, which is a compound Ratio of the force of cohesion & the flexibility. But as the water is diminished, the force of cohesion still increases & the flexibility is diminished; so that it may pass through the debile, laxum, & placcidum in passing to the rigidum.

We must now enquire what is in the human body giving these different proportions of placcidum & siccum. There are various, as 1^d The difference

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ference of the nutritious matter; It is probable that 37.
this as applied to the solid, is always in a fluid
form; yet still there is some latitude in respect of
its properly fluid state. For in the formation of the
different simple inorganic parts, as the hair, nails,
etc. there is a difference of density which seems to
shew a difference of fluidity in the nutritious matter.

2^d. There may be a difference according to the Ali-
ment taken in. This however is less certain, the Ani-
mal Economy seeming to modify this very variously.
It may also depend on the quantity of Aliment inde-
pendant of quality. For as it is always applied in a
fluid form, as more is applied, the greater propor-
tion will there be of the Humidum.

3^d. Much depends too on the progress in the growth
of the Body, for the fluid part passes away whilst the
solid is always accumulated. This explains the
Debility, the Laxity & Rigidity of the simple Solids
at the different periods of life. A difficulty occurs here,
that the further this goes on, the following accretion
goes on ~~more~~ ^{less} slowly. We explain it thus, that the
growth of our Solids is not by external adposition
but by a fluid matter insinuating itself into the
Pores of them. In proportion therefore as these be-
come more rigid, this will find more difficulty in
entering.

4th. It is influenced according to the various state
of

of the powers expelling the Fluid part & condensing the Solid. Two of these are the Temperature of the surrounding Air, and the degree of Exercise or Motion of the Body. Thus Cold favours the concretion of solid Matter. Heat suspends it in Solution & prevents such concretion. This explains then on the above principles why Animals are so very small in cold Countries. But tho' cold expels Humidity it preserves Laxity, and will therefore favour the Insinuation of nutritious Matter. Besides, the separation of the Humidity will be much influenced by the Humidity of the surrounding Air. Hence both heat & cold in the extreme give Animals of the same species of a less size than in the Temperate Zones. But the largest size is not found exactly in the Middle of the Temperate Zones, but in the parts inclining more towards the North.

How Exercise acts is not perhaps very certainly known. Metals can, by hammering, acquire a greater density. We may suppose the same to take place in the motion of our bodies as giving a greater pressure.

5th. There are certain powers determining the effects of nutritious matter, such are the original Stamina which tho' greatly modified by the above

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above power cannot be entirely changed; what this depends on must be referred to the mystery of Generation; but it is such a power as determines the quality, quantity, & application of the nutritious matter. But further, the proportion of the Humidum being given, much depends on the nature of the Secundum. Dr. Haubius is mistaken in considering this merely as an earth. There may be a larger proportion, but neither is this the basis, nor doth the force of cohesion in all probability depend on the Proportions of it.

He dwells too much on the Apposition of foreign matter, without considering the difference of matter, independant of the proportion of Humidum & Secundum. But we know so little of the Animal mist & its changes, it does not admit of much application. So we shall be content with making it out as a general head of the System, tho' Haubius goes further, & assumes several Suppositions, which may perhaps be true but may be also false.

We come now to the 2^d. head. Amongst these Powers we may reckon Heat & Cold, which modify the laxity & rigidity of simple Fibres. But still there are other powers independant of the matter of the Fibres themselves, and these are such as affect the motion of the parts on each other. A certain,

et de la grande épidémie et de la morte cause d'entre
nous. Il fut bientôt en force à l'heure 150-169
qu'il fut en état à devoir se faire aider, et il fut
bientôt dans le plus grand état de santé. Il fut alors
bien content et ne demandait que de faire ce qu'il
avait fait à la grande épidémie. Mais au contraire il
fut tout de suite très malade et il fut malade de
la fièvre pendant une ou deux semaines.

Il fut malade pendant une ou deux semaines et
il fut alors dans le plus grand état de santé. Il fut
alors dans le plus grand état de santé et il fut alors
bien content et ne demandait que de faire ce qu'il
avait fait à la grande épidémie. Mais au contraire il
fut tout de suite très malade et il fut malade de
la fièvre pendant une ou deux semaines.

Il fut malade pendant une ou deux semaines et
il fut alors dans le plus grand état de santé. Il fut
alors dans le plus grand état de santé et il fut alors
bien content et ne demandait que de faire ce qu'il
avait fait à la grande épidémie. Mais au contraire il
fut tout de suite très malade et il fut malade de

40.

certain degree of laxity in the other between the parts, & the different proportion between this and the exterior other will alter the elasticity of solids greatly, if we consider the matter in the view we before gave of cohesion. Both flexibility & elasticity require such a motion. This will, first, be more or less according to the flexion or oscillation to which any part has been exposed; for the flexibility of flexible parts is always improved by exercise. The effects of this in the human system have been sufficiently noticed. Thus we observe that a part becomes rigid if not exercised. This reason however is not exactly apposite, for here muscular fibres are concerned. But it takes place in parts where there is not such a particular organization, as in Tendons and ligaments. But the flexibility of those parts depends on their organic structure; so that the rigidity in these cases too doth not depend entirely on the rest of the simple solid. A more remarkable proof of this is, that a fibre capable just before of oscillation, if kept long in an extended state, on removing the extending powers doth not now shew contraction.

On the whole then it is obvious, 1^o That as flexibility and elasticity depend on the mobility of parts on each other, so this mobility depends much on them

the motion to which they have been accustom:
ed, and accordingly Flexibility and Plasticity are
much improved by Exercise. In all Flexible &
Plastic Bodies, the stretching act less forcibly ac-
cording as the body is more stretched. Thus double
the weight will not stretch a cord twice as far
as the original weight; and the power extend-
ing the cord must always be increased, in pro-
portion as the extension is further carried on.
So the Constitution & Composition of a Fibre being
given, & the Mobility of the parts on each other,
the Tension or laxity of the part will depend
on the stretching powers.—

Our Solid parts are stretched, 1st by stretching
powers applied to their extremities, & the whole
of the Animal body is so connected that the
Tension of the parts is communicated to each
other, & this extends over the whole System.
Hence in every strong effort we in some mea-
sure bring the whole body into Action, in order
to give a proper tension to the whole. Further,
it is peculiar to the Animal System that it con-
tains tubes distended with fluids circulating
through them. The state of the tension of these
vessels from their connection with the surround-
ing parts has a considerable influence on
them

more and more and harder it grows to us
 to distinguish the different species.
 I think that, instead of the
 one above, there remains the red shell
 duck-egg. This may be placed all in either
 orange which has a delicate hue when dried or
 yellow, which has a more intense yellow hue
 and is therefore a much better red, and more
 attractive when it is dried, when mixed
 with white it is reddish white, and
 gives a very decided effect, being
 bright and clear like light red.
 The shell duck-egg is
 reddish purple, like a very pale
 blue shell, and
 has a delicate reddish tinted shell, which
 is not so strong, however,
 than the orange shell, so that it is
 more difficult to dry, and when
 dried it is reddish brown, and when
 mixed with white it is yellowish white, and
 gives a very decided effect, being
 bright and clear like light red.
 The shell duck-egg is
 reddish purple, like a very pale
 blue shell, and
 has a delicate reddish tinted shell, which
 is not so strong, however,
 than the orange shell, so that it is
 more difficult to dry, and when
 dried it is reddish brown, and when

A2.

the Tension of the whole System. Further, the
Nervous power impelled in different proportions
to parts must be another great cause affecting
the Tension of the System. But further, there is
reason to think that there are particular passages
for the Air thro' every part of the cellular Mem-
brane. Senac, as we have already observed, sup-
poses that there is a quantity of Air contained in
every Membrane of the Body. This elastic fluid
probably varied oft in its quantity & elasticity from
internal & still more from external causes, and
therefore must have great influence in determining
the Tension of the whole System. There is reason
then to think, that the state of the simple solids
depends more on this Tension than on the Materi-
als of which it is composed, or any other circumstance.
But further there are several other circumstances
external extending powers. Such are Heat & Cold
which are said even to affect the composition of
the Fibre itself. But merely by acting upon the
external parts & thereby varying their tension, the
Tension of the whole internal System must be
also varied. Moisture & dryness too, only as af-
fecting the surface of the Body, will also affect
the Tension of the whole System. To this we would
refer the surprising effects of cold & warm baths.

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3. The Pressure of the Atmosphere, by its weight & Plasticity must act with great power in this way. Thus it enables the vessels to convey & reconvey their proper fluids. It is hard to say how so small an alteration as we see sometimes happens in the prodigious weight of the Atmosphere can produce the changes it does, but *Quic libratum facile mouetur.*

A. There are several other external causes, referred to by Laubius under the obscure title of *Ambientia*. To all these we would add the operation of *Mollient & Astringent Medicines*. These as externally applied may be conceived as entering into the composition of the parts. But this Notion is embarrassed with many difficulties, and we have occasion to think that Mollients penetrate no further than the Cuticle (as was observed of moisture & dryness) & action: by by affecting the Tension of the external surface, & by that the Tension of the whole System.

But further, we were to consider Fibres as in a more organic state. But it is plain that it is impossible to keep these two considerations entirely separate, tho' we have done it in a great measure. Anatomists now allow that most if not all of our Solids are of a cellular Structure.

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Structure. It will then be obvious, that if this cellular texture is liable to any variation, it will greatly affect the tension and laxity of the system. Thus if a portion of cellular texture is interposed between the pleura and external membrane of the lungs, it induces a degree of rigidity there. Again, the cellular texture being given, the laxity of the part will be increased accordingly as this is more filled with an inelastic fluid. This particularly happens if this inelastic fluid is accumulated so much as to over stretch the parts. Further one of the most frequent causes of Rigidity is the increased density of the cellular membrane. This too gives more contiguity and therefore more accretion of the various lamella of the cellular membrane.—

This gives us the variety of tension and laxity in the different parts of life. What has been here said of cellular texture extends to every vessel of the system. This finishes our consideration of the different states of the simple solid, and of the causes of these variations.

Gaubies assigns another cause, the violenta partium distractio: this may take place perhaps

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happens in the case of Tendons ~~and~~ Ligaments being torn. We cannot perceive that this admits of any application & it is not worth observing. These different States of Tension & laxity must have great effects in diseases, and as they are capable of being directed to useful purposes by the Physician, their consideration must be of the utmost consequences.—

This finishes the Subject of the simple Solid.

Membri Solidi Vivi. Page 72. Par. 169.

We now proceed to consider the Solidum vivum; in doing this we must first consider the doctrine as delivered by Galenius; but shall do it shortly.

He first gives us an Idea of a Solidum vivum, but his definitions run in a circle. A contractility that is excited by a number of causes not acting on any other part of nature is with him the vis vitale. But we must add that acting as elastic it doth not follow the same laws in this respect with other bodies. Thus in the extension of other bodies, the contraction is in proportion to the stretching power. In the Solidum vivum this doth not happen. Instead of saying Occasiones

(a) Gambino had no occasion to observe as he does in his
179 Par. that Sense communicates with the Vis Vizi-
talis; for Sense & Contraction are no more than modi-
fications of the same nervous power in different
parts of the System.

(b) According to the author's own admission, he has
not observed the sense of touch in the animal kingdom, and
therefore cannot say whether it exists there or not. He
has, however, observed the sense of touch in man, and
has found it to be a very delicate and refined organ.
The author's opinion is that the sense of touch is
more delicate than sight, and requires less
intensity of stimulus to produce the same effect.

16.

and not cause, we would rather call them parts of the cause). He is guilty of great impropriety in supposing two different faculties in the Solidum vivum; for these are no other than the two different states of the Agent & the Patient in every action of Bodies on each other. This view however has given him the foundation of that division which we have before noticed & adopted. But we changed his terms & gave a different explanation of the Facultas Sentiendi, confining it only to those cases where the Thought is interposed. If we take in all the circumstances of the Impression & the State of Perception, his position in Par. 171 might be admitted; but this leads us to confusion. In the whole discussion of Solidum vivum Haubius makes it to reside in the muscular fibre only, & very little different from Haller's vis Insita, which doctrine we have before exploded.^(a)

From Par. 181 to 187 he enquires into the nature of the vis vitalis, upon which part we have already made sufficient Observations. We agree with him that it is a Principium sui generis, but refuse that it is reparabile by

by Aliment. we say that it is a subtle quæd.
dam fluidum, sub ipsa concretione inditum.
It is indeed different from the Matter of Electricity &c, but has an analogy to them and is
only a different modification of the same kind
of matter. This power must be liable to its vitia
of excessus & defectus, and these vitia to be se-
parated from the consideration of the simple
solids affections, from organic affections, and
from the affections of the fluids in the ordinary
way in which they are considered by Pathologists.
As to the term that of $\sigma\alpha\ \alpha\pi\mu\omega\sigma\alpha$ is liable to the
same Ambiguity as the term Nature which we
have considered before as inclining too much to
the Stahlian doctrine.

In Par. 190. he begins to consider the na-
ture of these affections of the Solidum verum: he
views them in too limited a manner and with
some confusion of terms. He confines himself
to the consideration of the moving Fibre and
has therefore only Torpor and Irritability; but
when he comes to define Irritability he makes
it almost the same with Sensibility, & should
therefore either throw away the Term Irritability
or explain the meaning of the term Sensi-
bility — — — But

48.

But we must here desert Gaubius & consider the matter in our own view.

In the first place we consider the Nervous system as a whole where several parts have a communication in giving & receiving motion. In this communication we can perceive different degrees of Facility both in different persons & in the same person at different times. In this Facility we must conceive one degree in which health consists. This has undoubtedly some Latitude, but beyond it there may be an excess on either side.

Whenever the facility considered in common to the whole, or in the proper proportion of the several parts would keep to the general terms of Mobility and Inertia. But in some parts we may perceive intermediate states that distinguish them. It is always the motion beginning in the Organs of Sense, & passing to those of contraction. These have a certain proportion in which health consists. The motion from the Sensorium communes to the muscles being in proportion to that from the Organs of Sense to the Sensorium. But there may be a different degree in this proportion.

If the excess or defect of the Facility of Motion lies in the motion between the organs of Sense and Sensorium, this is an affection of

sense

(a) What is here meant will be illustrated by considering by
considering the difference between the Mobility & Strength
of a Bow.

49.

Sense. If it is a motion from the Sensorium communis to the Muscles, this is an affection of Irritability. So in the Organs of Sense we call excess Sensibility, the defect In sensibility: in those of Motion, excess Irritability, the defect Torpore. With regard to the propriety of admitting this division a question arises about the Proposition Contractione proportionata; but this we have before discussed, and so need not enlarge upon it here.

We come now to consider the causes of these affections. Sensibility & Insensibility are the same with the Mobility & Inertia of the whole. So Irritability & Torpor may in many cases be also the same. But other circumstances concur here. Thus the State of the Solid parts to be moved, supposing the Mobility given, must have an effect on Contraction, and Increase or diminish Irritability. From this consideration Sensibility & Irritability must plainly be distinguished from each other. But further we must distinguish ^(a) Facility from Force; and the debility or strength of the Organ of Contraction is to be taken separately from Mobility. Debility often concurs with Mobility, and so may produce Irritability. As in Contraction there are different circumstances affecting it, so these will produce different effects from a suitable cause.

(6) The conditions of the Sensus or Commune to be affected with Imotions may be considered as Sensibility; to be determined to action or motion as Irritability.

causes applied. These however are too oft confounded with Irritability.

We have hitherto overlooked what passes in the Sensorium commune in speaking of the Facility of Motion. We observed that what passes in the Sensorium may be arranged under these two heads Sensation & Volition. These are variously combined, and different in different cases. These are to be distinguished in the same manner as Sensibility & Irritability.^(b) Thus in the case of Fear or Anger. A man ^{more} affected with Fear is a person of Sensibility; he with Anger is a person of Irritability. In Irascibility we may observe a difference of Facility of Force. One man being very easily inflamed with Anger; another not very readily but with greater force. Whether any other simple affection besides these, we shall not consider at present.

In considering the causes of these affections, we must enter into the mysteries of the Nervous System. These causes may be referred to these three heads.

- I. The State of the Nervous fluid itself
- II. The proportion subsisting between the density and Elasticity of the Nervous fluid ^{on the one hand}, and the Tension and Rigidity of its confining Membranes on the other.

III. The

(a) The condition &c of the Nervous fluid therefore will likewise remain. But these causes can affect the condition of the Nervous fluid in a very slow & gradual manner. They are therefore seldom to be considered as in themselves inducing morbid states of the Nervous fluid tho' they may contribute to predispositions. Of the causes much more sensibly & suddenly inducing considerable changes of the Nervous fluid & consequently giving occasion to Diseases are first heat & cold.

I. State of the Nervous Fluid itself.

The Nervous Fluid like other Fluids may differ in density & Plasticity. These sometimes proportional but not always. Thus whilst the Plasticity of Water is 70000 times greater than common Air, its density is much less. In common Air whilst its density is diminished by heat, its Plasticity is increased. In the Nervous fluid we may suppose the Density & Plasticity in different States. The purity may give mobility, the Density diminish it. By the Analogy of other Plastic Fluids we may suppose the Density to be varied by the different States of the Matter in which it inheres, either the simple solid or more properly the Medullary Fibre. This may be considered as the proper Stamen of the Animal body, and as the State of the Simple solid will be correspondent to this, the Density of the Nervous fluid will depend on its condition. We observed that the simple solid is varied in the progress of life, but this through the whole is determined by the original Stamina in some measure. (a)

The same may be said of the Nervous Fluid animal

Animal life depends on the Heat & cold applied to it. It is equally probable too that it depends on the mobility of the Nervous fluid. It is therefore probable, that the different degrees of heat will vary this & give a different state of Density & Elasticity. But there is in most Animals a power in themselves to generate Heat, so that they do not depend entirely on the surrounding Air. This balance with the surrounding Air differs in different Animals, which makes it difficult to apply this doctrine to particular Animals. But this balance being given, it is plain that Heat will give Mobility, cold on the contrary Inertia. Besides, Heat & cold affecting the Elasticity of the Nervous power, it is difficult to say what other external powers may do the same. We have formerly said that Sedatives & Narcotics probably act on the Nervous fluid itself, independant of the Solid matter. It is a Maxim in Philosophy that matter only acts on matter by contact. In the case of Sedatives there is a matter acting on a small portion of our Nervous fluids, whereas its effects appear at a considerable distance— This must either be by a propagated Impulse, or we must suppose the matter to be insinuated and diffused in our Nervous fluid, and thereby capable

capable of acting to a considerable distance). As to the first we may say that from Impulse nothing but Impulse can arise. But as here is a Diminution instead of an Increase of Motion we are obliged to have recourse to the second Supposition. This is the foundation of the Hypothesis of Narcotics acting by being combined to our Nervous fluid.

But we must own that this is not a conclusive Argument, but like other Dilemmas may be a Sophism. All Impressions on our System are made by Impulse, and as this must act by increasing motion, every Impression must be Stimulant. But we find that in the Sensorium commune a particular Modification gives sometimes a Stimulant sometimes a Sedative effect. This shows that it is not necessary in our System, that a motion produced should go on in producing Motions continually. But perhaps this may depend on perception alone, and be a Law of the Sensorium commune alone, not of the action of matter upon matter. Yet we find that in the case of parts taken out of the body, Narcotics still preserve their proper effects; and this must be looked upon as the action of Matter upon Matter.

It is probable that as Narcotics thus diminish the mobility of the Nervous fluid, so other Bodies may increase its mobility. This may lead us to

an explanation of the Actions of other Poisons,
whose Nature we are not yet sufficiently acquaint-
ed with.

II. The proportion subsisting between the Den-
sity and Elasticity of the Nervous fluid on one
hand, and the Tension and Rigidity of its con-
fining Membranes on the other.

We now proceed to consider the 2^d head of Poisons.
To Oscillation of Plastic fluids it is necessary that
these be more or less confined by pressure or
otherwise, as the Nervous fluid is by surround-
ing Membranes. We observed before that the Den-
sity or Elasticity of the nervous fluid, are in pro-
portion to the state of the Matter to which it
adheres. The different proportions may give dif-
ferent Temperaments, yet they are not likely to
prove Occasional causes of diseases. Notwithstand-
ing this, it is probable that this proportion is var-
ied considerably in the progress of life. The Medul-
lary Fibres seem to suffer little change, whereas
the Cellular Texture and Membranes formed of
it seem to undergo very considerable changes.
The proportion therefore must change considerably.

In the first part of life the proportion is on
the part of the Nervous fluid. Afterwards the
surrounding Membranes become more tense
(and)

and rigid, and are an over balance to the Nervous fluid. This is a general Idea, but to point out the Ideas of it is very difficult.

We are of opinion that at first the Other is of little Density & Elasticity, but that the Nervous fluid acquires this early in life. This may be at the time when Sensations and Memory begin. This is from 5 to 7 years of age. But the Medullary fibre having thus acquired its proper state, is very little changed afterwards, whereas the surrounding Membranes are greatly. We may suppose a time when both the Nervous fluid and the Membranes are at their highest degree of Perfection, and in the justest proportion. This is the apex of life, after which Sensibility, Irritability & Strength diminish in consequence of the increased Rigidity of the surrounding Membranes.

I shall only now attempt this general sketch of the matter. It will explain predisposing causes on several occasions.

But besides there are occasional causes affecting this proportion between the Fluid & surrounding solids. The Elasticity of the Fluid in proportion to its density is greatly varied by heat and cold, and this may change the proportion between the Nervous fluid and the surrounding solid. (The simple)

Simple Solids). But Heat & Cold act the former more readily on the fluid; the latter on the simple solid. If continued will probably act on both. The Action of heat & cold on the Sanguiferous System is an illustration of this; where it may act on the Fluids or Solids. Heat acts more quickly in rarefying the Fluid than the Solid, and therefore the effects of it as first applied are Paroxysm and Distension.

Cold acts more readily on the solids, because they are more exposed to it, and because they are sensible. The same will apply to the Nervous System, and produce Sensibility and Irritability.

We come now to mention those powers that affect the Simple Solids. But there are scarce any other except those of Cold & Heat. But the Tension of the parts will have great effects, as before observed, and may variously modify Sensibility and Irritability. An instance in Van Swieten of the cure of the most remarkable degree of Irritability in a young Lady by Bandages applied round the body & limbs to give a proper degree of Tension.

As a want of Tension gives Mobility, so may

an excess of Tension, for the more the Tension of the whole System is, the more will it be affected by any slight variations in any part.

III. The causes affecting the Action of the Sensorium commune.

We are now come to the third general head of causes such as affect the Action of the Sensorium commune itself. Under this title we comprehend all effects of different States of the Sensorium that can influence the Mobility of the Nervous power. 1. The communication between Impression & Contraction is only through the Sensorium, and therefore Contraction following Impression will be more or less easy as that communication is more or less free. The communication may be affected by pressure, not only ligatures on any Nerve, but by pressure on the Organ itself. This is observed in a great variety of morbid cases as stupor & arising from Fluids variously accumulated in the vessels of the Brain or effused there. This leads to an observation or two not strictly connected with our subject.

I. It is difficult to determine to what degree this pressure proceeds. The occasion of this difficulty is that there occur complete Pulses oft, remaining

so far a long time in spite of all medicines used to renew the communication, and yet such cases have been afterwards accidentally cured, as by a fit of Anger. But the communication is not only not completely shut up, but a Nervous Influence is propagated to the Extremities of Nerves: for application of Stimuli, as of Electricity will excite Sense and Motion in these parts.

This may lead to a supposition that the Nervous power remains long inherent in the Extremities of Nerves, after the communication thro' the Sensorium commune is shut up. Such a Supposition would greatly affect the question, that the Nervous power doth not depend on Secretion.

II. Another Observation is, that oft in Palpies Sense remains when motion is lost. This leads to a Conclusion that less Tonic power, less communication thro' the Sensorium commune is necessary to Sense than motion.

After this digression we return to our subject, and observe that Mobility may depend on the communication in the Sensorium commune being affected by pressure. Hitherto the Subject has only been considered in the case of diseases; we shall now consider whether in the Latitude of health there may not be such a degree of pressure as

as to affect the Mobility of the Nervous Sys:
tem.

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By what circumstance can we discern this pressure to take place? Anatomists have not observed in different persons a different proportion of cortical & medullary parts of the Brain, tho' it is very probable there is a difference. There is a foundation for some such supposition from the Observation made upon large heads. The case of Infants affords another instance of this larger proportion of head to the rest of the body, and in them we know that there is a greater quantity of fluid sent to the Brain in proportion to its size. This may account for their Torpor and Stupidity. This excess of proportion in the Cortical part of their brain may prevent the too great degree of Sensibility & Irritability that might arise from their Medullary Fibres soon arriving at perfection.

Further, we find at different times of life, and in different Temperaments a difference of Proportion between the Arterial & venous blood. The venous Blood in the head is not subject to muscular pressure, and its return from the Brains is conducted in a particular manner, so as to retard its progress.

(M)

We are led to think this is intended to serve particular purposes in the Economy. Hence the Venous Blood in the brain is liable to be accumulated, and thus in those with a larger proportion of it in the Brain, it will affect the Mobility of the System and give a particular Temperament.—

This Retardation increases in the progress of life, for then the Venous Blood is always in an overproportion to the Arterial. Hence the Inertia and Torpor of old age, and a man at that time of life is most exposed to soporose diseases.

Hence then the state of the sanguiferous system in the Brain may variously affect Mobility and Inertia. But in the medullary substance itself, there is something affecting this mobility. It is probable that in different conditions the Nervous power is sometimes more accumulated in the brain, sometimes more freely distributed to the whole system. The first gives Inertia, the latter mobility. This is easy when we consider that Inertia and mobility are only other words for sleep and waking. We must repeat here that from the Elasticity of the confining solids, the Nervous power is resisted and pressed more to the Sensorium commune during waking, and if it was not for certain powers, would stagnate in

in the Sensorium commune.

What are these powers? Two of them are sufficiently obvious. 1st The Impulse of Arterial Blood at the basis of the Brain. 2^d The Action of various external Impressions. The first is more constant & evident. We see that if the heart ceases to act, the functions of the sensorium commonly cease. We may observe here that this is greatly prevented by a reclined posture. These effects are so sudden as not to be accounted for from the ceasing of a secretion. Again, when the Impulse is a little more violent, it proves a stimulus to the Sensorium. This then is probably what keeps up a determination from the Sensorium commune to the organs of sense & motion, keeping the nerves full & confining Solids in proper order. This we call the Tonic power. The determined degree of it is regulated by Habit, and a diminution of that determinate degree gives Irritability, as the excess doth that other kind of Irritability mentioned lately.

It is difficult to apply this general doctrine to particulars. The reason of this is, that we do not exactly know the state of the Heart's Action, or whether a less frequent and fuller action is more powerful than a more frequent one. Now to consider

consider how far the distribution of the nervous fluid depends on the Impulse of the Arterial blood alone, or whether in every diminished impulse in the Arterial, the venous, blood in proportion stagnates, is accumulated, and concurs in compressing the Brain, & thereby diminishing the distribution of the Nervous power to the whole system. Though we cannot exactly determine the different states of the heart's action, yet it is necessary to enquire by what causes the Heart's action is increased — These are two, 1. Influex of the Nervous Power — 2d. of the venous Blood. The heart has its Nervous power in consequence of the common Tonic power. Tho' more steadily determined to it than other parts, yet every variation of the Tonic power will probably affect this determination of the Nervous power to the Heart, and thereby variously modify its action. — Here then we see a connection of cause & effect, the Sensorium acting on the heart, and this again on the Sensorium.

The Action of the Heart may be further affected by other causes independant of the Sensorium. For the Tonic power being given it is highly probable

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variable the action of the heart is varied by the state of the Blood.

The 2^d general cause of the distribution of the nervous power to the system, is the variety of external Impressions. Thus we see that when the distribution is at a stand, and the action of the heart itself stops, heat & various other Impressions restore the Tonic power, and in consequence of that the action of the Heart. These Impressions keep up the Tonic power, and in consequence of that the action of the heart. These Impressions keep up the Tonic power in the state of waking.

To reduce this doctrine of Impressions to general propositions.

As this distribution depends on Impulse, the Tonic power will be in proportion to the Impulse. If the Impulse is excessive the distribution may also be faulty in excess. But a moderate use of all the functions tends to strengthen them.

2. The effects of Impressions are most considerable, *ceteris paribus*, as these Impressions are more varied. Thus impressions by engaging the attention can destroy the sensibility in every other part of the System. To render the distribution more general it is necessary that the Impressions

Impressions be considerably varied.

3. If there are causes of Impression acting other wise than by Impulse, as by affecting the condition of the Nervous fluid itself giving it rarity & thence Mobility, these will be new sources of effects of Impression.

A. The Effects of Impressions will be in proportion as they are attended with reflex sensations. How far this is modified as the Impression is attended with Agreeableness and Disagreeableness is difficult to say. The effects will be greatly varied according to the different degrees before given of each. On the side of the disagreeable we can see there are distinct genera; The Simply disagreeable, the Uneasy, and the Painful. Of the Simply Disagreeable, those opposed to them are what we call the Pleasures of the Imagination. These give an increase of Sensibility with regard to the object, and moderate agreeable Impressions prove a stimulus to the System. But as they are moderate they seem never to give Irritability. The Agreeable opposed to the Uneasy we spoke of very fully before, and shewed it to depend on the fullness and steadiness of the Tonic power. These give a sensibility to objects of the same cast. The Uneasy Impressions give a sensibility, but to objects also of the same

same nature, and in consequence of that too a particular Irritability to the same. The pleasant sensations opposed to the painful by occupying the Attention destroy Sensibility. But when the Impression is gone, it leaves the body relaxed, sensible, and irritable in proportion to its degree. — Bodily pain hath determinate effects according to its degree both when present and past. When present it gives both Sensibility & Irritability, but this is limited according as it engages the Attention. But as pain has power of determining to the System in general and to particular parts, it increases Sensibility & Irritability. How it produces Syncope and even Death is not known, but it may be supposed to produce its effects by determining the Nervous power to one part and leaving all the rest destitute. Hence when past it produces Atonia and Torpor.

This is a general view of Pleasure or Pain giving Sensibility or Irritability according to their degrees. We might go on to shew how these are modified as attended with Propensities, Appetites, & Passions of the mind. But we are too ignorant of the Action of the Sensorium to discuss this subject properly. We see that a particular state of the Body follows particular states of the Mind.

This

This Subject will be resumed in another part
of our Pathology.

We go on to observe that Stimulus acts by caus-
ing a Determination of the Nervous power to the
part to which it is applied. The Tension of particu-
lar parts may depend on Habitual Stimuli, and so
the want of these may leave the part more lax,
sensible, and irritable. In the Blood vessels a stimulus
applied excites the Action of the vessels to a cer-
tain length; this must be attended with increased
Impulse, which will increase the Tension & hence
the part acquires Sensibility; hence Inflammation
may give Sensibility to parts not before possessed
of it.

Further, by Repetition Sensibility is diminished,
Irritability increased. Habit determines the order
in which Actions succeed each other, and also the
force and velocity with which they succeed each
other. Hence a particular Equilibrium will be
constituted between the parts of the Nervous
System. A change of this order then disturbing
the Equilibrium, will give effects of Irritability.
Hence we see why every new & strong Impressi-
on is so irritant to our System.

It might be of service to give another Head of
Sydenham's Ataxia; but this we cannot prosecute
at present.

This

This finishes our consideration of the effects of the Sensorium commune; we shall not like Gaubius, consider here the general effects of these affections; but proceed to consider with him the Morbi Solidorum continentium.

Morbi Solidorum Continentium. Page 200.

Physiologists after considering the affections of the Simple Solids, proceed to consider them as adapted to particular functions, or the Morbi Instrumentales. Yet in doing this they consider the Solids only as so many Masses without any respect to the Functions they are intended to serve. The Division of the Morbi Similares and organici amongst the Antients was less improper, as under the first they only considered the matter of which our Solids consist. But as here handled this part doth not properly come in here, as not tending to throw any light on the Proximate cause, which is the chief purpose of this part of Pathology.—

Accordingly Dr Gaubius himself observes that these vitia do often times not at all disturb the function, and that they are rather to be considered as effects or symptoms, which is really the case.

We shall therefore pass over this whole chapter of Morbi Solidorum Instrumentales, as they are rather to be referred to Anatomy, and would lead us far from our purpose. A part of them will come in more properly to be considered under our Symptomatologia.

Morbi Solidorum continentium
sunt vel.

I. Non continentium

1. Intra modum

A. Per vim distendentem aquam.

a. congestâ umeriore mole.

b. volumine expansione aquo.

c. Impedito Trajectu.

d. Impetu Avectorum enormi.

B. Ob vim continentem immunitam.

a. laxatis Membranis.

b. Ruptis quibusdam ex pluribus.

c. Fulcimento Ablato.

2. nequaquam continentium sed emitentium.

A. Per Anastomosin.

a. ob causas 1. a. 13.

b. ob Sphincteres resolutos.

B. Per Diuresin factam.

a. vi Mechanicâ externâ.

b. Ruptiones a distendentibus quo (sonzis)

c. Irosione quo (diapwois)

II. Non Transmittentium qui Obstructio.

1. Absoluta.

A. Per Obturationem.

a. Per Materiem indigenam in vasa non sua impulsam, qui viror loci.

b. per Materiem indigenam degeneram.

c. per Materiem alienam.

d. per partem intus suscepitam.

B. Per Angustationem.

a. ob trahitum Parietum auctam.

b. ob compressionem externam.

c. ob collapsum.

d. ob contractionem.

e. ob coacervatum.

2. Relativa, cum plus infundatur, quam quod eodem Tempore transmitti potest.

Ob

In the Series of Proximate Causes the State
of the Conformation of the Internal parts has
great Influence, and therefore may properly enough
be considered here. (Vide Table above.)

Gaubius has done this in his chapter of *Morbi Solidorum Continentium*. He observes that these
Cavities have their particular sizes, which if they
exceed or fall short of, Diseases may arise. This
division is not correct, thus for instance in
this cannot be considered as a difference of
size.

Of the increased size of cavities he makes a
species. He ought to have divided the *Morbi Soli-
dorum Continentium* into two kinds.

I. Those which contain their fluids imperfectly,
which gives the dilatation of Gaubius, and

II. where they do not contain the fluids at all, un-
der which his 3 other species are to be ranked.

Dilatation is of two kinds, 1^o where there is
a greater impulse on the sides of these cavities.
2^o where the sides themselves are weakened, the
Impulse being the same. There are 4 causes
which may give rise to the first of these species
of Dilatation, as we find them in Gaubius. To the
2^o head belongs two species, 1^o where the sides
are weak in themselves. 2^o where they want
certain Fulcrum, which they are ordinarily
provided

provided with.

If that head of Diseases, where the vessels do not contain the Fluids at all, the first is Anastomosis. This may have causes of two kinds, 1. All those that are causes of Dilatation. 2^d. Where the Orifices are provided with Sphincters, & a Resolution or Palay of these Sphincters takes place.

Next follows the Diapedesis; but it is doubtful whether this has any place in our System. It proceeds upon the Supposition that a great part of our system is composed of regular Fibres interwoven with each other; whereas we before shewed that it was highly probable that the chief part if not the whole of our solids is composed of cellular texture. The only doubt that arises is with respect to certain muscular Fibres. There are instances of the Heart's being found very thin, but this perhaps is owing to another cause. But the whole of this consideration admits of no application, so Diapedesis may be omitted altogether.

The Diuresis which next follows is of three kinds, 1^o When it arises from external mechanical force giving a Solution of continuity. 2^d. From a proternatural Impulse of the fluids. 3^d. From Irrision. These several cases of the magnitudo aqua of Gaubius. In par. 207. Gaubius considers the effects of these affections, but these too to be referred

referred to the Symptomatologia.

Next follows his Morbi Augusti. Here we particularly find the bad effects of his not considering these affections with respect to their Functions. For Impeditus Trajectus, we would use the term Obstructio; this is properly divided by Boerhaave into two kinds; 1^o where the fluids become unfit to be transmitted. 2^o where the cavities are unfit to transmit the fluids, the last of these properly belongs to us, and is called the Obturatio. This is of 8 kinds. 1. The famous Error Loci. It is much disputed whether this takes place in the Animal System. Reasons against it are, first, that discovered by microscopes, that if a particle of Fluid enters into a conveying vessel, it is impeded there for some time, but soon the Elasticity of the vessel exerting itself repels this particle. Secondly, Air vessels in their ordinary size may be unfit to transmit particular fluids; but they are of that laxity as easily to admit of Dilatation, which will prevent this Error Loci becoming a cause of obstruction.

The 2^o Species is where the Fluids become changed in their nature, being now justo tenaciora. The subdivision of this is to be considered hereafter.

The 3^o Species is from a Materies aliena, either generated in the Body or introduced from without.

Gaubius

Gaubius adds properly a 1st. The Inter Inspectio, of which the chief instance is in the Alimentary Canal.

The II^d. Head of Obstruction is where the canals become unfit to transmit the Fluids. Gaubius reduces these to 5 heads. 1. Obstipatio; This is that straightening of the canal arising from the sides of the canal being changed. Next follows compression, which may be of various kinds; Tumours in the neighbouring parts; Hard pieces of Bone thrown out of their place &c. &c. The next cause of diminished capacity of the vessels is the Collopus, when a hollow cavity has its sides falling on each other, which always supposes a degree of Placidity in the parts.

In what parts of the System can this occur? Probably never in the Arterial System, for tho' these vessels contract it is regularly in their whole dimensions. Neither can it happen probably in the Alimentary Canal. In the Venous System too it scarcely occurs in the smaller veins, in the larger veins it doth in some measure. When will it have effect in producing proper obstruction? Of itself it scarcely can, because, 1st it will yield again to the impulse of fluids poured in. Two other circumstances are requisite, that the Fluids do not follow in, or that external

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external compression prevents it from yielding to this impulse, or that the two sides grow together. Contraction is more considerable where vessels by their natural contractile power are brought to a smaller size, so that they do not transmit the fluids at all, or in too small quantity. Gauthier divides the causes of this into 3 heads, but how the two first differ we do not perceive.

It is matter of question in what cases the vis elasticæ or vis vitalis takes place. We can imagine that the elastic power in our fibres may be increased in a particular part of the system by whatever increases the cohesion of the parts, with their mobility on each other. It happens indeed in the whole system in the course of life, but not in any particular part. Contraction then must rather be referred to the vis vitalis. ~~No don't suppose~~ what Gauthier means by saying that the vis elasticæ may prove a stimulus to the vis vitalis and thereby induce contraction. Perhaps he had an eye here to the causes of Inflammation.

The last cause is the coailities, where the cavity is filled up with some matter produced from the growth of its own sides. ^{There are} no two parts of the body naturally disjoined, which, if brought into contact and kept so for a time, do not grow together.

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together. Whether it is a portion of coagulable Lymph, or other such matter in the cavity, disposed to form itself into a cellular texture, or Cellular Texture is sent off from the Sides. But in either case this coalesces cannot be a primary affection, but must depend either upon external compression, or on contraction continued for a long time. Hence this is excluded by several Physiologists.

Vide Table for Morbi Solidorum Instrumentarii,

I. Cohesio vitiosa.

A. Absoluta - Continui solutio.

a. Fractura.

b. Vulnus.

g. Continui solutio secca.

B. Relative - Nexus Incongruus.

a. Nexus excessu peccans.

b. _____ Defectu peccans.

II. Collocatio perversa.

A. Luxatio.

a. Deastricollatio.

b. Subluxatio.

g. Symptomis solutio - quo Nexus potius tribuenda videtur.

B. Hernia, quo varie distinguitur.

a. Pro ratione Sedes.

b. _____ partium clavicularium.

C. Procidentia.

D. Aberratio.

III. Numerus vitiosus.

A. Numerus excessu peccans.

b. _____ defectu peccans.

IV. Confirmatio vitiosa.

V. Magnitudo.

A. Excessu peccans, quo Inormalis.

B. Defectu peccans.

Morbi Fluidorum. Par. 265.

Passing over the Morbi Solidorum Instrumentaria, for the reasons above mentioned, we now proceed to the Morbi Fluidorum.

The Bulk of the Human Body consists in a great measure of Fluids, and the condition of these not less necessary to the several functions than those of the Solids.

In 267. Par. Gaubius meets with a difficulty in treating these as diseases. This we have nothing to do with as we consider them with a view to Proximate causes. The Fluids may either be considered absolutely in themselves, or with a view to the Solids. This gives the vitia Absoluta or Relativa. Fluids differ from Solids, but only in the degrees of cohesion between the parts. But in the Fluids themselves there are various degrees of cohesion which deserve our notice. Gaubius therefore begins with considering different degrees of Fluidity. He considers all deviations as affecting the whole fluids, or only particular ones. This occasions some confusion. The consideration of these deviations in general will be little understood, till we apply it to the case of particular Fluids. We shall however follow his order in this respect. Instead of the Morbi coherentie, & acritates

Aeritatis morbose, it would have been better to have considered the affections of the Fluids, as the affections of their Aggregation, or of their mixture. The ratio coherentis may either be in defect or excess. Both these conditions, he says, may either take place in the whole of the Fluids, or in particular portions of them; but this last comes to be considered hereafter. Do Deviations in this respect occur so frequently, or are they of so great Importance as most Pathologists have supposed? We think they do not, for Nature has provided means to prevent these Deviations from going to any great degree, as we shall show in another place.

We must begin with considering the causes of Fluidity in our Fluids in the abstract. All Fluidity according to Gaubeus depends on a Fluidum primum. — We suppose this to be a very false Idea in Philosophy. At present it is the common received opinion that fluidity depends on the quantity of Other in bodies, which comes ultimately to Gaubeus's reasoning. But this Other is common to all Bodies, and the difference of mixture depends on the different proportions of atoms, these being no body in nature properly humid or dry. We have no reason to think that water is naturally Fluid, or Gold naturally solid. Two solid bodies put together may become fluid, and much oftener two fluid bodies put together become solid. —

(See)

The conclusion then of Dr Gaubius must be rejected.

We may admit that the greatest part of our fluids is water, and that the fluidity is, ceteris paribus, in proportion to the quantity of water. But a different fluidity also arises from the mixture of the solid, according to the diversity of the ingredients. This however contradicts the proposition Gaubius set out with concerning fluidity. A small quantity of Saloop will give viscosity to a large quantity of water. Some of the Larinaceæ do this in a less degree. This shews that the different conditions of the solid influence fluidity.

Gaubius goes further, in supposing these ingredients to be earthy, phlogistic &c. But there is no reason to believe that these have any invigorating quality. Gaubius hints also at a mucosum quidam as occurring in our fluids. We have already observed that we have no evidence of any such matter being present. The proper proportion of these, with the conditions of motion and heat give the proper fluidity. Motion assists also in diffusion, Heat is a principal instrument or means of fluidity in our fluids. But Heat only relates to Bodies in solution. With regard to meats it may seem to increase their action, but this probably is owing only to its effects on Solution. But as the heat of the human body is very determinate and doth not admit of much latitude

lässitude, it cannot occasion any great difference in the Fluidity of our Fluids. At least it doth not act much on the aggregation of our Fluids.

A Question next follows whether Fluidity is owing to any particular Form of the particles of our Fluids. Boerhaave supposed that the Action of our vessels gave a degree of Rotundity, wearing off all angles, and giving a proper Spherical form which is the foundation of fluidity. We do not know the particular form of the smallest particles of our matter, nor the causes which can influence or change these forms.

Gaubius next goes on to divide Spirofistudo & Senacitas. Spirofistudo is of two species. 1^o depend on the defect of fluid parts. 2^o on the excess of solid parts. The defect of fluid parts may be either owing to the want of a proper supply, or to their after separation again. We would observe here that a morbid Spirofistude induced by any of these causes is very rare. If the fluid part of our Aliment is in an inferior proportion, it may either have the effect of diminishing our watery secretions, or by that of preventing the separation of the saline particles of our Fluids.

The Auctiores lymphaticæ Secretiones too by producing Thirst, prevent the bad consequences that would otherwise arise. But this seldom happens in the whole System, and if only partial the Excretion is diminished in other parts. In Dropesies too there

there is a sensible diminution of Secretions, which compensates for the want of the proper proportion of fluid parts that might otherwise occur.

Further, it is very difficult to find when such a morbid Spissitudo doth take place. The consequences of Drosorū do not seem at all deducible from this Spissitudo.

As to the 2^d Species of Spissitudo, it is very manifest that there will be a great difference in this respect in different persons, according to their diet, Temperament, way of life, sex, &c.

We have before refused the existence of the Gluten Iners, so have no occasion to follow his reasoning on that head. He is willing here to support the Pneuma frigida of the Antients.

What next follows is still more subtle; but with regard to the doctrine of Elementary parts we have spoke fully before. All these matters mentioned here must be so much changed by the Solution and Fermentation they necessarily undergo in the alimentary canal, as not to be able to occasion any change in the consistence of our Fluids.

The general Effects of Spissitudo here given are chiefly Obstruction.—

Excess of Fluidity is divided into two general Heads. The first of these when the watery parts are in over proportion. The causes here adduced are generally just. Some doubt whether the warmth or coldness of the liquids taken in can have any effect

effect. It cannot have any beyond the Stomach, but there cold drink acts as a Stimulus, and maintains the System in a more healthy state, whilst warm drink relaxes the Stomach, and in consequence of that the whole System.

A curious question arises here; How far Bathing increases fluidity? where the Perspiration is languid the Body becomes a kind of Sponge, and assumes a great quantity of Humidity. In the other cases it will scarcely have any great effects in this way. (This was afterwards acknowledged by the Doctor to be sometimes a cause of Senility of our Fluids.)

How the evacuations nimis should act this way is difficult to conceive. It would seem that there is some inaccuracy here, and that effects are here confounded with causes.

In the 2^d Species depending on particular Ingredients we do see that a large proportion of Saline matter in the Senosity, will make it dissolve a greater quantity of Coagulable Lymph, and thereby give more fluidity. The causes of this will come in more properly elsewhere, and we shall not stop to take notice at present of these effects.

The Acritates Humorum Morbosæ we chuse rather to consider as the states of the mixture of our fluids.

We would refuse that Blandities is a general quality of our fluids. The common mass has always an acrid matter to the Taste. Several of the Secretions are naturally very acrid. Many of these Secretions are afterwards too absorbed into the common mass. But it is enough for us that our System is insensible to certain Acrimony. Accordingly we suppose that this happens in the Inner surface of the blood vessels, which are not sensible to certain Acrimonies. The Secretion of Urine is oft stoppt after its Secretion, and this acrid matter oft circulates for a considerable time in the common mass without shewing any marks of Stimulus.

What follows on the subject of acrimony we have already taken notice of, and given our Opinions concerning it. Gaubius next divides Acrimony into mechanical & chemical. Before entering on this he considers by what powers our System is defended from this Acrimony. These he refers to 4 heads. 1. The Blandness of the Aliment taken in. But some Acrimony is taken in this way. The 2^d power is that Nature has provided the *principia viae* with a certain Sensibility that operates by throwing out the offending matter. As to the Contraction of the Absorbents, this is merely a Supposition not proved by facts. Many Acrimonies undoubtedly enter

enter the prime via, & hence the Lacteals, and appear in different parts of the System. Another supposition may be conceived, that these Absorbents have an Elective Attraction to certain particular matters. But perhaps whichever of these Suppositions we adopt it may be probable that certain Matters may escape this Sensibility or Elective Attraction, by being intimately diffused and blended with the chyle. If Acrimony gets into the common Mass of Blood notwithstanding these powers already mentioned, Nature has still provided other powers to guard against the Acrimony. It is probable too that the Animal Oil is absorbed on these occasions to serve the same purpose. The Acrimony introduced can only be in small quantity, but little of this enters the Lacteals, whence it is diffused with the whole Sypm., & afterwards with the common Mass of Fluids. —

But further Nature has provided several Secretaries to take off that portion of our Fluids which is likely to associate itself with foreign matters. Hence we should be very cautious of admitting Acrimony in our System.

The Boerhauians have supposed also a mechanical means of preventing Acrimony by the changing the Angular form of the particles into a

a Spherical one.

The sources of Acrimony are two. 1^o A foreign matter introduced into the System. 2^o An Acrimony produced in our fluids. The chief causes of this according to Gaubius are excessive motion of the Fluid joined with the natural process of Fermentation. Another cause is directly opposite, viz, the Stagnation of the Fluids, whereby something is kept in the System that should be thrown out. Further a defect of any of the Functions intended to correct or expell Acrimony will necessarily be a cause of it. The chief effects of such Acrimony are Dolores Pruritus, Convulsions, &c. Vide Par. 30b.

Still however these may rise from other causes and are not always to be referred to Acrimony alone. But further, Gaubius goes on to observe, that particular fluids are liable to particular degeneracies. He begins with Acidity. This chiefly prevails in the prima vice, and it may be doubted whether it ever exists in any other parts of the System. No observations shew that a Fossil Acid has ever been introduced into the System, so as to prove a cause of disease. We have therefore only to consider the vegetable Acid. The defect of some of the Assimilating powers must be the cause of this appearing in its proper form in the prima vice, and producing a morbid

Acidity

Acidity. Thus the fluids may not be supplied in proper quantity as much as required, or not rightly blended with the Aliment taken in. Or the Stomach perhaps may not evacuate itself suddenly enough. All these may arise from a Debility of the Stomach.

In pointing out the effects of Acidity Laubies enters into a Chemical Reasoning, founded on very doubtful principles. Every view we take of our fluids leads us to believe that every addition of Fluids to this Acrimony tends to prevent it, and that there are particular fluids particularly exposed to it. All this leads to the supposition that Acidity never appears in its proper form beyond the prima via. Our fluids probably consist of different Ingredients according to the Nature of the Aliment and the state of the Assimilating powers; and this difference may give a particular character to our fluids. But still we ought to be very cautious in assuming what is the particular state of our fluids, and deducing the causes of diseases from thence.

Laubies adds that an Acrb Acrimony may also be generated. It may be so, but how it is generated, or how it may produce the effects ascribed to it, is a very dubious piece of Theory. The Acrimony of the volatile kind might appear probable but we are still dubious about it. None of the causes assigned for it

it seem likely to produce it.

Whether an Alcalcent state in our system is analogous to the same in vegetables, or only inclining to Alcalceney or putrescence we have spoke of before. We marked out the more distinguished steps of the fermentative process, but there are several intermediate ones which we have not noticed. What may be the state of the fluids in these intermediate states, and what effects it may have in producing disorders, we are little acquainted with.

A properly putrid matter is capable of promoting our natural fermentative process in our system, & assimilating greatly in a short time. Wherein the various Acrimonies consist & what state they induce we don't know, and confine ourselves to general terms we cannot therefore follow Gaubius in his reasoning on this subject, where he endeavours at an explanation. —

Tho' the Alcalcent state takes place it very seldom happens that a proper Alcali is detected in our system, even when every circumstance has occurred that could form its evolution. It has been supposed that the application of Alcaline salts will decompose the Sal Ammoniac within us, & give a Dr. But it is very doubtful whether this ever takes place in reality. —

Dr. Hucham has supposed that the use of Alcalcents

Alcalescents may induce an Alcalescent state in our fluids. But if we consider the quantity of fluids taken in at that time, their being introduced in such small quantity &c, we cannot conceive that they ever decompose a Sol Ammoniac. They more probably act by diminishing the quantity of Acid that might be found in our fluids. Neither do we know that any poisons are of such a nature as to give occasion to the Evolution of O_2 — i.e. a volatile alkali.

With regard to the Putrid Deathesis, a putrescence doth take place, but whether the putrid state consists with regard to the saline & oily parts, is not known. We can allow the more general foundation of it, but in what circumstances it is owing to one or another cause we are much at a loss to determine. How two directly opposite causes should produce the same effects is hard to explain, but founded on fact. There is a certain Evolution of some Effluvia, which if carried away to the surrounding air no Putrefaction ensues; But if this stagnates on the surface so as to be allowed to be reassumed this will give occasion to Putrefaction. This appears in the perspirable matter on the surface of the body, and still more in that from the Lungs. Whether this Mephitic Air acts as a Poison is not certain from experiments, tho' it appears very probable —

In giving the general heads of Putrid Acrimony, we want a distinction of the several species of putrids. Gaubius then goes on to consider the Muriatic Acrimony. No Chemist has yet explained what is the effect of the common Salt we take in with the greatest part of our Aliment; or what is the cause that this matter is so hurtfull to certain Animals, so beneficial to others. It is therefore difficult to say what are its effects in us.

The Sea Scurvy is by many supposed to be in part owing to the common Salt, and contrary effects have been imputed to it. We may admit in general that all Saline matters give a Tenuity to the fluids, render them more acrid, and may in several parts of the system prove Stimuli. But whether they induce Putrefaction, and give rise to the several Phænomena of Scurvy, we can by no means determine. We are of opinion that this Muriatic Acrimony occurs very rarely. —

The Ammoniac Acrimony we may more readily suppose, this being a natural consequence of the putrefactive process. This will account for several of the Phænomena of Scurvy tho' not perhaps for all. Yet the Serum of Scorbutic blood has proved an antiseptic to other putrid matters. —

Besides

Besides these Acrimonies which are the chief, 91.
there remains others not yet noticed.

Gaubius next proceeds to another consideration
which is properly introduced first by him in Pa-
thology. We see that the particular matters of
which our fluids consist may separate from each
other. But there are two kinds of secession which
Gaubius confounds together; the secession of matters be-
fore joined by diffusion, and those joined by solution.—
with regard to the first he supposes it of two kinds.
1. The secession of watery parts from a too small ^{quantity of} maf-
tementum, or,

2. From

It is probable that both these take place, tho' hard
to say when the one and when the other prevails. In
general there is a secession of the Red Globules &
Lymph from the Serum, but sometimes also there
is a separation of the Red Globules from the Lymph.
We know that this takes place too within the System.
We therefore suppose that there is a particular
condition of the fluids disposing to this or that
secession, but don't know what these conditions
are. This will be resumed in another place.

With regard to the secession of coagulable Lymph,
Gaubius supposes it to be of different species; but
we

we do not know what foundation there is for doing so. It is in that species which he imputes to earthly matters, that he chiefly confounds the secession of matters before joined by diffusion, and of those by solution.

Our Fluids are to be considered in three different states, as Chyle, Blood, and various Secretions. This is the view Laubius takes of them. —

Chyli Vitia. Par. 323.

Nature has used various means for Assimilation, so it is difficult to conclude from what appears in the *Prima via* to what actually prevails in the System.

There is no proof of the Acid Acrimony prevailing in the Chyle. We are inclined to doubt of some of the causes assigned of it. The Effects of Acidity in the *Prima via* are very justly marked out, but not certain that it extends any farther. —

Next follows the Alcalcent Acrimony. Putrid Ingesta may have this effect in the *Prima via*, but more commonly it appears in the Stomach in consequence of the Mass of Fluids being first affected, and these putrescent humours being poured back on the Stomach. —

ff

of these external causes the Bile seems chiefly
to be in fault.

The next kind of Acrimony mentioned is trans-
crescence. This is not so liable to happen as Gaubius
thinks, nor can all his causes be admitted here. —
There are such provisions in the prima via either
to assimilate these matters, or to prevent their being
admitted by the Lacteals.

The same may be said of the viscosity which next
follows. Some of the effects ascribed to this are
very improper, as the Vomiting of Proper Phlegm, wh
is nothing more than the Mucus lining the Stomach.
As to the other effects too they must be rare, as the
causes are rare.

Heretofore Gaubius has considered the affections of
the Chyle according to its mixture; he now proceeds
to consider the different proportions of its Ingredients,
which probably do not take place and influence
the Fluids of the System. But it is very difficult here
to condescend upon particulars, or to point out
either the causes or effects of these different pro-
portions.

With regard to the Oil, we before endeavoured to
shew, that it is rather dissolved than diffused in the
Chyle, which would prevent any such affection as
Gaubius assigns for the cause of Obesity.

Sanguinis

Sanguinis affectiones. Par. 332.

We now proceed to the Sanguinis affectiones. The first part of this section we have already touched upon, it being purely Physiological. It is probable that a certain proportion of the several parts of the Blood is requisite to health, but this will admit of a certain latitude. We know the excess of Serum will give fluidity, and it is highly probable that excess of coagulable Lymph gives Tenacity. But what are the effects of an excess of Red Globules, or in what cases it takes place is very uncertain. Dr Gauvius's reasoning here is not to be admitted; for in the first place he goes on the supposition of these being oily bodies; and even if they were, the conclusions he draws are very ironious. There is no proof that Oil is sooner heated or cooled than other Bodies. We can allow that in the Leucophlegmatic habits the Serum is in overproportion; but that in the melancholic there is an over proportion of coagulable lymph, or that the Sanguine is a just mixture of the whole is very uncertain. In the Serum it is obvious, that water may exceed in proportion.

As to the 2^d cause, we don't know that it exists, at all, in the System. The want of Tenacity is nothing more than the want of Coagulable Lymph in it, and therefore comes under the affections of that part of the Blood.

95.

(See also)

Dr. Laubius next considers the Morbid States of the Red Globules. We know nothing of these except their Immiscibility with other parts of the Blood, which gives them a determinate size, and therefore we cannot say much of their morbid States, or the causes of these. The causes too of the colour of these must be much concealed tho' Laubius enumerates several. If Levenhoek's System is rejected, the force of Condensation must be rejected. The term Phlogiston is very obscure, nor can we allow of Mucus, Acid, &c.

With regard to the Purification different Experiments are produced. Some say that it diminishes, others that it increases the red colour.

In accounting for the higher colour it is not probable that it depends on any of these circumstances on the Red Globules themselves, but on their being more or less diffused in other parts of the Blood. The Attenuation can scarcely be admitted in any other

other sense. we do not know from any one experiment that a red Globule of itself is of a deeper or paler colour. Yet Gaubius seems to think that this happens, and mentions several foreign matters inherent in the blood.

He proceeds next to consider the coagulable lymph. It is this which gives the Inflammatory crust. In some cases the other parts may be able to hold it more in diffusion, which will prevent its proper separation from them. Perhaps too this may be owing to its being too small in proportion. In some cases it may be owing to the state of its mixture as Gaubius thinks, but not oft. The spontaneous putrescent tendency of our fluids going on to a great degree may have that effect.

The Lymph too may exceed in its disposition to concretion. 10

With regard to this we have already observed that Nature has provided means to prevent this from going too far. Gaubius's proof rather favours our opinion. The application of cold prevents this separation and concretion. In the case of the Inflammatory crust, there is no proof that the coagulable lymph is then in greater proportion, but is disposed by certain circumstances to separate more perfectly. Any crafoamentum from

which

which Red Globules are washed out is equally dense with any Inflammatory crust.

There are two kinds of Inflammatory crust; one as described by Gaubius; another where the crust is spread over the whole surface of the liquid, more Serum being entangled in it.

All this Paragraph depends on the supposition that the Inflammatory crust depends either on an over proportion of lymph or a greater disposition of it to concrete. With regard to the first we must doubt much of it, if we consider how soon blood is disposed to shew this crust. Thus if a ligature is put on a limb for an hour, the Blood shews this crust. The application of cold is said to produce the same effect. But of the whole of this we have spoken sufficiently before.

We do not imagine that any foreign matter is introduced into our system, so as to produce any coagulation in our fluids. With regard to the specific gravity it may depend on the quantity of water or red globules, but we know little of the matter.

As to the elasticity, this probably depends on the quantity of air introduced.

Succorum Secretorum Vitia. Par. 369.

We come now to consider the fluids in their third state as prepared by the several Secretaries. We can suppose that deviations of the secreted fluids may depend on Morbid deviations of the common Mass. But as the Secreted fluids require a new Constitution during Secretion, these deviations may be independent of the common Mass.

In the Saline Aquaceous fluids we can indeed discern various states of Tenuity or Thickness; but what causes induce these is not at all obvious. Gaubius says that these allow the Saline parts to secede, and that these crystallizing give the Calculous Concretions. This is a curious observation and seems not void of probability; but we do not know how far we may extend these general rules, and we have an instance of these concretions taking place in a fluid of a different nature, the Bile; This is a fluid of a particular kind, which has long, with Justice, held a great place in our Pathology. Yet we have gone but a little way in explaining its nature, or finding out the manner of its production. We may suppose that the Water or Menstruous part of it, may not be

be sufficiently impregnated with the proper matter which may give Inertia. In this proper matter too there may be various Acrimonies, but the nature and causes of these not rightly understood.

The several appearances of the Bile have not been sufficiently noticed; much less can the causes or effects of these be known. There is great room for Experiment here.

The succus Mucosus may undoubtedly vary in consistence & Acrimony, but we know no more of the Nature of these, than we do of those of the Bile. We cannot agree with Gaubius that Stagnation favours the production of Acrimony. As the Mucus draws off a portion of Serum which is the proper seat of Acrimony, it may contain Acrimony in it, but does this rather in its fluid state, than from Stagnation, which can only make it retain Acrimony that was before in it, more tenaciously. The several species here mentioned are unknown to us. —

There may be Contagion adapted to seize upon the Mucous Glands. Hence Catarrh is found to be so often contagious. Contagion seems too to regulate in the mucous in most of the Exanthematous Fevers. The Small Pox very commonly throw a portion of their Acrimony on the Mucous Glands of the Fauces. The same happens in the Measles, Scarlet Fever

Fever, and Drysipelas. The fatty Juices are also fit
to retain any Acrimony in them, but the Oil is
itself a Guard against Acrimony, and is frequently
used by Nature for that purpose). 100.

Boerhaave supposed that the Acrimony of the dues
venerea had its seat in the Oili of the body. There
is no foundation for this except that it attacks the
Bones. It seems rather to have a connection with the
mucous, tho' probably not confined to any particular
portion, but diffused through the whole mass of the
Fluids.

Dr Haubius next mentions the particular Acrimo-
ny of Oils, Rancidity. This seems to be a kind of Fer-
mentation, but its nature not perfectly understood,
nor do we know any disease to arise from its
presence in the system. The fatty part of our Body
according to Haubius consists not only of Oil, but
also of Mucous, and this aqueous mucosity abound-
ing may produce Leucophlegmasia, Anasarca, &c.
This is entirely hypothetical. Our oily part may
also deviate into excess of consistence. A disposition
to this appears in certain kinds of Animals, but we
cannot draw any application from this. We cannot
agree to the conclusion that from hence arises
Induration, Tuberole, &c. The Steatoms in particular
we refuse to be concretions of the fatty kind.

The

101.

The milk of Animals undoubtedly differs in proportion of its Ingredients, and perhaps in their qualities. This tho' chiefly is not solely owing to the Chyle. Thus one cow in the same pasture will give more milk and butter than another according to the circumstances affecting the secretion alone, as Age, &c. In speaking of the *gelatina hæmœris* doth not enter into the notion of M. Senac. Before the nutritious juice is applied to particular parts, it is prepared in the system, but in what manner is still a mystery. we may allow that it may in certain cases be affected with various Acrimonies &c as here said, but of this we have no certain knowledge. It is probable that Nature has prudently guarded against such deviations of this nutritious juice on which life depends. If Dr Hamel's notion of the Generation of Bone is to be adopted, any deviation is probably rather a topical affection than any general Deviation. If the *Plenum vitale* be a matter of Secretion which we are inclined to reject, we know nothing of the state of its *Materia* or of its particular Deviations. There are innumerable mysteries here which we neither can nor probably ever shall investigate. —

Morbi Humorum Relativi. Par. 383.

We now proceed to the morbi Humorum Relativi. There are three sources of this as they differ in Copia, Loco, et Motu.

Quantitas Humorum Vitiata. Par. 384.

We shall begin with considering the Quantity of Fluids. The proportion of Fluid to Solid undoubtedly admits of great latitude, tho' there is one best proportion, which however it is difficult to discern, even when present.

Gaubies considers it at first in respect of the whole Fluids to the whole Solids. He illustrates this by the states of Infancy and old age. In the former the fluids exceed, in the latter the solids. The Temperies Humida is to be referred to different proportions of the several Ingredients of the blood, as also the Temperies Seca.

To consider now that plethora or plenitude of Blood passing into the Red vessels, and which is now more abundant than is best proper for the system. The existence of this state seems undoubted. We shall first consider the several species of Plethora. The first is that depending on the quantity, or absolute plethora. Next is the plethora ad spatiuum, happening to

be so from the contracted state of the Solids, the quantity of the Fluids not being changed. Whether this should properly come in here as a State of Pethora is doubtful. Instead of being a Predisposition it is perhaps rather the attendant of a Symptom.

Further, our blood as an elastic fluid may be expanded in its volume, which will have the same effects as absolute Pethora. Next follows a difficult question concerning the Pethora ad vires. This term has been applied in two different Senses. It has been applied to a particular degree of Pethora ad molem, where this arose to such a degree as to affect the Actions of the Solids. In this sense it is only a difference in degree & scarcely deserves to be distinguished. This seems to be chiefly what is considered by Gaubius in the several instances he adduces.

The other Pethora ad vires is when the fluids are in proper proportion, but the solids are not in a proper state to transmit them. This doth not deserve the name of Pethora at all. It appears then that what we have chiefly to consider is the Pethora ad molem. Gaubius rather confuses us here by bringing us back to πολυχύμια. What we mean by it is when the Red. vessels are preternaturally extended with Blood.

W D

We agree with the Systematics in distinguishing Pethora vera, & spuria, or ad volumen. The plethora vera ad molem is of more consequence and requires our strictest consideration. As to the cause of this it must depend on a faulty proportion between the Ingesta & Secreta. These in a sound state are either pretty exactly ballanced, or there are provisions made by nature to restore this ballance; But these depend on a variety of complicated Functions, & Pethora doth undoubtedly exist in the System. The causes may be reduced to these two heads. 1. The Ingesta being increased, the Secreta still remaining the same. 2. The Secreta being diminished the Ingesta remaining the same.

The first depends on the quantity of Aliment taken in, and the state of the Assimilating powers.

The causes that affect the Secreta are as follows. 1st The Secreta are more or less, as the state of the fluids are more or less fitted for secretion. Our Aliments are in the first place changed to a coagulable Lymph, a viscous fluid fitted for the purpose of Nutrition. This being changed to a saline state & mixed with water gets a tenacity, and hence becomes disposed for excretion. Hence saline matters introduced with our Aliment keeps up the excretions and prevent this plethora. Animal food as giving the coagulable Lymph will be found a less per-
sirable

spirable food than most others. The food of younger Animals is for the same reason a still less per-
spirable food than that of older Animals. This then depends much on their fitness to be converted into Coagulable Lymph. 2. More or less is thrown off by the Excretions, as the Solids are more or less lax, the quantity of fluids being the same. The Impulse of the Heart is partly spent in compelling the pro-
gressive motion of the fluids, and partly in dilating the vessels. The more readily these vessels are dilated the more will the progressive motion of the fluids be lessened and consequently the Excretions be diminished. Another circumstance here to be noticed is, that the Laxity of the System is in dif-
ferent proportion in different parts. The Density of the Arteries increases as you recede from the Heart. The Dilatation then is greatest near to the heart, which is the foundation of the filling of the vessels, and accumulation of the Blood in them. The dilating powers of the heart are constantly diminishing whilst the density is increasing, which preserves a proper balance. On drawing out blood from the red vessels we find this is apt to pro-
duce plethora. The Tension of our solid parts de-
pends much on habits and customs. There is a cord flexible to a certain degree, and which on removing

removing the stretching power contracts itself to a certain state. But if a weight is appended to it for some days it will not now contract itself as before. So do our vessels seem to be able to accomodate themselves to various states of the quantity of fluids. But they got a habit of being accomodated to a certain quantity. Our vessels seem to distend themselves in order to be accommodated to the quantity of fluids they are to transmit. But it is probable that when a portion of the fluids is taken off, they don't contract themselves again proportionally which will occasion laxity.

Effects of Bloodletting then are to induce laxity on the vessels, so that fluids thrown in are more apt to accumulate, the excretions are lopt, and the small vessels are not filled till the larger ones are restored to their former state. whilst the smaller vessels are in this state of increased rigidity, from the lax state of the larger vessels the accumulation in the larger vessels not only arises to its former state, but even exceed that. we must observe here the effects of introducing a partial plethora in different parts, in consequence of a different proportion of Density or Laxity.

The Density of the veins is greater in proportion

to that of the arteries in the begining of life; afterwards the Arteries increase in Density, or come nearer to a balance. This explains why the Arterial Plethora prevails in the beginning of life. In old age the quantity of blood is the greatest in the venous system and gives a venous Plethora. We must refer to the same the other partial plethoras. Thus the head in infancy is the largest, and furnished with the greatest proportion of Fluids. Hence the Haemorrhages and congestions at ~~the~~ that time of life. Afterwards the other parts get more extricated, and increase in proportion to the head. The Pulmonary System is now more nicely balanced with that of the Aorta, whence Haemorrhages so frequent in the lungs then. As to the Omnes it is much questioned whether it is a partial or general plethora. The distension of the neighbouring parts must give tension to the whole System, which will have the effects at least of general Plethora.

There are also various external powers, affecting the progressive motion of the blood & thereby the secretions, as Exercise of Body & Mind. Hence a state of rest and sleep and indolent life occasions Plethora. —

Lastly there are certain powers affecting the secretions

secretions themselves. Thus the suppression of usual evacuations, as of perspiration, has great effects this way. The want of the perspiration is in some measure compensated by the urine. But still it has a tendency to occasion Plethora. Hence a certain degree of cold gives a tendency to a Plethoric State, and hence the animals of any particular kind are largest in a particular temperature. Moisture joined with cold in particular favours this. Such are the various causes producing Plethora.

Graubius next considers the contrary of this. He is disposed to limit this case, and supposes in every gradual diminution of the Ingesta or increase of the Secreta, the Solids are disposed to contract themselves, and preserve a proper ballance, so that the want of good blood can arise only from large and sudden evacuations. We cannot agree to this, for we have many instances of the effects of sparing diet in this way. Yet large and sudden evacuations must be allowed to act most powerfully this way. We should add here that Lieutaud has properly introduced a disease, the Inflammation or want of red blood. The French Physicians have indulged themselves in taking away large quantities of blood—Lieutaud gives two remarkable instances of the effects

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effects of this, and we have seen the same. Even if the evacuation is not of red blood it may act powerfully this way, as in the Fluor Albus and all putrid discharges, since pus is immediately formed in the coagulable lymph.

Gaubius goes on properly to consider the nature and causes of the Obesity. This is oft confounded with proper Plethora. It arises from the same cause, but is oft the effect of the other plethora, and may come by degrees to be substituted for it. By straitening the Bloodvessels too it may give the Plethora ad spatia. This subject is very fully handled by Haller in his Elementa Physiologiae.

If the nature of Obesity is properly understood, that of Emaciation will also be known, and requires no further comment.

Fluida Loco Aberrantia. Par. 397.

We come now to speak of the Fluida loco Aberrantia. It is obvious that most fluids have their distinct seats, and these too confined within narrow limits. Others have wider limits but still are not without their bounds. All these are properly called Erroneo loci. Gaubius divides these into 3 kinds - 1. Error
Schemum

Fluentium; 2. Error Impactorum; 3. where the fluids have changed their place^{enter} into vessels by which they are carried out of the body. & where they are passed into cavities not designed to receive them. May there not be a 5th case?

The Error Fluentium is of 2 kinds as we consider the Sanguiferous system divided into Red vessels, & vasa minorum generum. To the 1st the red globules are confined tho' perhaps the lymph is not. If these red globules then get into the vasa minorum generum, this is an aberration. An aberration of more consequence is where fluids more confined are carried into seats not their own. This happens in the case of the Oil taken up into the blood. This however is not a proper instance, as the oil when taken up is for guarding against acrimony &c, and is not carried along in the blood in its proper form. Another more considerable instance is Absorption of the Bile into the system. This however is a proof that the inner surface of the blood vessels is not very sensible, since in these cases there is oft no remarkable disturbance.

The next instance is that of Urine. This fluid may be diffused over the whole system, and unless it is pushed into particular cavities, as into the ventricles of the brain, it continues so a long time

time, without producing any very dangerous effects.

Next is the Absorption of Perspiration. Here the Pathologists have had recourse to a particular Acrimony retained in the system. But we offend the Perspiration retained & compensated for by the Urine without any bad consequences. Even where the Urine is not proportionally increased, it has continued obstructed for some days, & then been restored without any bad effects.

We cannot refuse that retained perspiration may produce Acrimony, but insist that the instances particularized by Pathologists are not of that kind & may be explained better another way, as by a change of Tension.

The Doctrine of Concoction and Crisis is still involved in great Obscurity.

We know of one cause only of Perulence. Whether the absorptions of various other matters is to be considered as Error Fluentium is uncertain.

Next follow the Error Impactorum. As all particles of Fluids by their sine levicidity are not fitted to be transmitted thro' all vessels, this Error Impactorum may arise. Yet we don't know in what cases it arises except in the cases of the red Globules passing into the vasa minorum Generum. This is the famous Error loci of whose Existence we doubt much. 1^o We are

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are disposed to believe that the series of vassa minorum generum is very short. The vessels too are capable of much dilatation, without any bad consequences, and red Globules do accordingly pass thro' them. Further in these minute vessels, the Ramifications are very frequent. What gives occasion chiefly to this supposition is the logical form of the vessels. But the space between every Ramification is perfectly cylindrical, which will tend much to prevent any such obstruction. Add to this, that in case of great dilatation a great contraction is also produced, which will drive the red Globules backwards. This Fact observed by all Microscopical observers.

From all these circumstances this Error loci must be very rare. Dr. Gaubius seems sensible of this and adds the cases of obstructed vessels in consequence of Spasm. But this not properly an Error loci, which is never the cause of obstruction in red Globules, tho' Spasm of the vessels supervening may occasion obstruction.

The Error Excretorum is of two kinds.

1. Where the fluids that shd. not be poured out at all, are carried out of the body. Whether the Serum is carried off in greater quantity in the Diabetes is not very certain. The secretion of

Salle

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still greater fluids is still more uncertain. The
2^d case is, where the fluids that shd be excreted
are carried out by passages not their own.

The instance of the Sanguis Menstruus leads to the
supposition that a particular kind of fluid is pre-
pared for that secretion in the Uterus; whence it is
only owing to a change of Equilibrium.

The 4th case is the Exsor of Exsorum, which is,
the most considerable of all & may be called Lehy-
mosis. A difference arises here, first, from the man-
ner in which the fluid is poured out whether by
Anastomoses or other affections of the Solida Con-
tinentia; 2^{dly} From the cavities into which they
are poured, either natural or preternatural, as
in Hydroptic cysts. 3^{dly} From the nature of the
fluid poured out; this may be referred to an in-
creased impulse of the fluids, as in Sagillation,
Inflammation, Hemorrhage.

There is another case of increased Senuity, as in
the Pectechiae & other putrid effusions. 4^{thly} From
the changes induced in the fluid effused. The reason
of these various changes are not known, as why
in some cases a Coagulation takes place; in others
a Suppuration, and in others there is a reabsorp-
tion. The Absorbents in their natural state are ca-
pable of absorbing fluids only of a particular kind.

Bud.

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But if you wound these absorbents further from their orifices, they will now take up fluids that they did not before. Suppose that this rupture of these vessels takes place in the reabsorption of the red globules, which explains that Phenomenon.

Next follows the Effusion of serous Fluids. The various causes of these Effusions we have already delivered in a Table.

With regard to the corrupted humours this depends upon the changes induced in the effused humours. Dr. Gaubius properly adds the case of air. But in what cases this happens or with what effects it is attended is not known.

As to the question next started we must not be rash in concluding Ossification of blood vessels &c to be an error loci.

The 3^d head of Morbi humorum relati is the Vitia Motus.

The various fermentations occurring in animal fluids are carried on by a motion of their parts with a decomposition probably and some change of their mixture. That such a motion is going forwards seems without doubt. But after this general Observation we can go no further, nor can we assign the nature, causes, or manner of action of these motions.

Another

III
and often associated with disease of the
skin, but it is not always skin with vesicles and
blisters that gives such a fever, and it is not always
that there is vesicular fever in cases of acute disease
where there are vesicles and blisters, but
there are cases where there are no vesicles or blisters,
but there is a fever, and it is in these cases
that we find the feverish condition of the body.
There is also a feverish condition of the body
when there are no vesicles or blisters, but there
are other symptoms of disease, such as
dysentery, diarrhoea, &c.

D^r. Cullen's Doctrine of Fever.

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Another species of the Motus vitia more manifest is a change of the progressive motion of the fluids. This is either general or partial, as it prevails in the whole or only part of the system. Dr. Gaubius here touches upon two of the most important points of Pathology, viz., the proximate cause of Fever, and of Inflammation, but he doth it in a very imperfect manner. The importance of the subject requires that we dwell more fully on it.

Of the Irritamenta of Gaubius we may observe that if they continue for any long time, the System is provided with certain vessels or pores which prevent their effects. This doth not account for the most frequent instance of Increased velocity as Fever.

We cannot readily refer this to the action of external causes, for these seem to be our intermediate state that of the Cold Fit. In this there appears very universally an Inertia of the System. How these Stimulant powers introduce this intermediate state of Inertia is not easy to conceive. It is necessary to look here for another set of causes.

This subject may be considered in two ways.

1st In a practical view as to establish the fact that this
cold fit always takes place. 2^d To see —

Doctrine of Fever.

2. To shew that this cold fit consists in a Spasm
on the surface, which is a Stimulus inducing the
increased Action of the heart & Arteries, in order
to overcome the Spasm. 116.

The other view, and which more properly belongs
to Pathology is to confine ourselves to this series
of causes, & shew how these act in producing
each other. This is a difficult matter; but, first,
we can readily conceive that cold applied to
the surface of the body by increasing the contraction
of the solids and by diminishing the rarefaction
of the fluids & the mobility of the Nervous power,
may resist the distribution of this power to the
extremities of the Nerves, and make it to be ac-
cumulated in the Sensorium commune.

2. The Nature of the Sensorium commune is such
that there is a certain power thereto restore the
System to an Equilibrium making a resistance
to its Accumulation, and pushing it to the ex-
tremities of the Nerves, especially those of Mo-
tion.

3. Admitting of Dr. Haller's Scale of Irritability
with regard to the heart, or from custom, or from
its share in the Equilibrium of the System, the
ordinary influx thus produced will act on the heart
and larger vessels. The increased action of these
will tend to restore the action of the Nervous
power

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power to the extreme vessels, they propelling the blood there too, will serve to increase their action and produce respiration & a copious sweat. But in the next place we must observe that this is not the order always in which they happen. In some cases the affections begin in the Sensorium; thus an Object of fear in consequence of certain relations before established, will produce a constriction in the Sensorium commune, which will have the same effects as cold; here then there is the same accumulation in the Sensorium.

1. It is not difficult to suppose that Miasmata or Contagion (the other head of causes of Fever) may operate on the Sensorium commune in a manner analogous to Fear; or, what is less probable, on the extremities of the Nerves in the manner of cold.

Its operation in this way is pointed out by innumerable facts.

An Accumulation in the Sensorium will sometimes kill immediately. Further contagion of itself may be sufficient to produce this series of affections. But according to Dr. Lind and others it seldom or never has this effect, without the concurrence of cold or fear. The theory of our has not yet touched another source of Fever

Doctrine of Fever.

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Fever very different from the above, viz, Topical Inflammation attended with general fever & febrile haemorrhages. Hence our Theory doth not apply so readily - Yet first we observe that this topical Inflammation arises from a distension of particular vessels - How this over distension is easy to conceive, for it proves a direct stimulus increasing the action of the moving powers in these parts.

Further the distension must be communicated to the neighbouring vessels, and the stimulus may also be extended so as to produce Inflammation. But how it should extend over the whole system is not easy to shew. We may suppose it is by constriction on the part, which gives a stimulus.

This stimulus doth not produce general fever without a previous cold fit. This is what gives the greatest difficulty here - The particular constriction here is by sympathy said to be communicated to the whole system. But this term doth not explain how this communication is produced.

We have formerly evaded this question & hinted that cold applied to a part of the system will produce cold over the whole. The horror here

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here is to be supposed a communication of the 119
affection along a continuous membrane, yet
even here the Sensorium seems to have a share
in the communication. Waving this I would
say that the Sympathy applies only to the
external surface, not to the Pleura, Peritoneum &c.
Another explanation is to be looked for.

Thus, we would observe that every excretory
effort is attended with Urine, as in vomiting,
excretion by Stool & Urine, hemorrhages, men-
strual eruption, exclusio partus &c.

There must be something then in the effects
of over distension besides Stimulus to produce
this Horror. We may suppose then that it also
produces Anxiety, wh^{ch} is universally attended
with a weakness of the Sensorium, & consequent-
ly an accumulation of the nervous power
which will operate in producing a general fever.
This combines all these cases of topical In-
flammation &c with the Theory of general fever.
This Theory might be confirmed by enumerat-
ing the several Phenomena of fevers, by an
application of it to the several species of fevers
&c But our time will not admit of such a dis-
cussion —

This finishes what we have to say on the sub-
ject

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ject of Fever and Inflammation. Dr. Gaubius next proceeds to the Morbi Compositi. He is sensible here that this will lead to a very subtle question on his own plan, and it belongs rather to a practical enquiry. Omitting this then we proceed to consider the Remote causes.

These are divided into the Occasional and Predisponent.

The Potentia nocentes may in certain cases prove either. These are reduced to two heads properly.

1. The action of external Bodies on us.
2. The actions of the Animal System itself.

The first may also be referred to the applicata & ingesta, the latter to the gesta. The subdivision of Non-naturals is unnecessary, and the term itself is ambiguous. Dr. Gaubius has not himself assumed any regular division but begins with the Air.

In considering his Nocive Atmospherae Potestates, he

1. regards its sensible qualities.
2. Its essential properties. - and -
3. Its various contents.

To speak of each of these now in order. Under the sensible qualities of the atmosphere we reckon Heat & Cold, Dryness & moisture. The two first are the most

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most considerable powers acting on our system.
Their effects are to be considered as Absolute or
Relative, either in changing from degree to degree,
or in respect of the state of the human body.

As to the Absolute heat every temperature less
in degree than that of the body would diminish &
bring it to its own degree, if the human body
was inanimate. But in animal bodies & especially
the human this doth not happen, but rather when
continued serves to increase its heat.

If the human body is at 98, an air of 80 will at
its first application feel cold unless preceded by an
air of 70. But in either case if continued it increases
the animal heat. The first point then to be determined
is to say what state of the air is properly heat or
cold with respect to the animal body.

The mean temperature of the different countries
has been fixed upon as the necessary degree of the
state of the air in this respect, by most Philosophers.
This agrees perhaps tolerably well with vegetables,
but not at all with Animals, wh^{ch} have a power
of generating heat within themselves, and we find
that this generative power is different in different
Animals. — No Experiments are yet made on this
subject.

But with regard to the human body in this climate

Animal Heat

it seems to be at 62° of Fahrenheit's Thermometer,
 a chamber of that degree of heat being agreeable,
 feeling neither hot nor cold. In any temperature
 below that we don't immediately find cold unless
 we get below 60° & nearer to 50° . — At 64° the air
 appears rather warm, at 58° cold and rather dis-
 agreeable. Any degree below 62° has either more
 or less of the Effect of cold, above that, of heat.

A determinate degree of heat is requisite to the
 mobility of the fluids, as also to the laxity of the solid,
 & accordingly best suits the human constitution. —
 This heat is from 96° to 100° . — In $\frac{9}{10}$ of the globe men
 live in a temperature much below this animal heat.
 Here then a part of this heat must be communicated
 to the neighbouring Atmosphere.

There must then be in men a power of generating
 a heat of 96° whilst the temperature of the air is
 at 62° . If we take two bodies which have no
 power of generating heat, as two portions of water
 but of different temperatures, & blend these together,
 the temperature of the mixture will be the mean
 between that of the two portions. For bodies thus
 applied by contiguous surfaces are one getting, the
 other losing heat. But in bodies generating heat it
 is otherwise.

If we take a furnace wch we can keep at a determinate
 degree

Animal Heat

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degree of heat, the vessels &c placed in it will arrive at nearly the same degree. But on account of the communication with the air by which the furnace is always losing heat it comes to a particular balance which is not equal to the generating heat is above the mean degree between that & the surrounding bodies. This point will vary greatly in different climates, being lower in cold & higher in warm ones. It must however be observed that it rises in hot countries more than it sinks in cold ones.]

Thus the absolute heat is variously modified by the relative.

Let us consider the effects of absolute heat either on the whole system, or on Respiration alone.

1. Heat gives greater rarity & elasticity to the nervous power & consequently greater mobility, and therefore greater sensibility & irritability.

2. Heat expands all bodies, increasing the laxity of all flexible bodies & so of our solids; but this it diminishes the Tension & makes it less steady.—

This is another source of Mobility and particularly of Irritability

3. Our fluids are somewhat expanded by heat in their bulk which gives a distension of the solids. In particular the very increase of Elasticity gives greater fluidity.— all fluids we find increased by heat, as also

Animal Heat.

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also all intense motions in bodies. One of the most sensible effects we see is a constant tendency to putrefaction. It also promotes the Acescent fermentation in all bodies liable to it. It may probably have that effect in the human body as Dr. Gaubius thinks - But we cannot admit of this - It goes on to a certain degree in our Stomach, but there are certain provisions there either to check the Acetous fermentation or by mixing with these matters to give them rather an Alcalescent tendency than an Acescencey. We must add to all these that from some of these powers already mentioned.

Heat by its own stimulus constantly increases the action of the heart & arteries, giving a more frequent pulse, and in consequence of this perhaps determining the fluids more copiously to the surface of the body. - But this may also be owing in part to the laxity the heat induces on the vessels of the surface. Hence then perspiration is increased, urine diminished. From this determination to the ~~feaver~~ surface a greater proportion of fluids is carried off that way. Hence the urine is not only diminished, but is also made more acrid.

We may suppose the same of Bile tho' we don't know its precise states of acrimony.

We must now consider the particular effects of Heat on Respiration —

W D

Animal Heat

* We find that flexible Bodies do not increase in their flexibility in an equal Ratio to their increase of heat. If we take Wax or Sulphur these by Friction become elastic, but by increasing this heat they incline to melt & become less elastic. May we reason from this Analogy & suppose some such thing to happen to our Nervous Power, the mobility of which may be increased by a certain degree of heat, ~~but beyond that is diminished.~~ ^

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We can explain Respiration by supposing the Aperture of the glottis sufficient to admit air enough to restore the balance made by the dilatation of the Thorax.

The air we breathe is much cooler than our body. As thus applied then its heat must be increased, by course the Elasticity. We must impute then the dilatation of the Lungs partly to the quantity of air taken in, but also to the change it undergoes in Elasticity. This will be in proportion as the air is more or less dense. Hence the most cool & dense air gives the easiest respiration. Where the temperature of the air equals 98° , respiration must depend entirely on the quantity of air taken in, and hence it is very difficult then. The fluids too are then rarified & occupy more room in the Lungs, which contributes to make the transmission more difficult, whence arises that debility sense of resistance & languor in the hot countries it is not easy to say, but probably it depends on the Anxiety occasioned by this difficult respiration which as we have before observed is attended with weakness of the nervous power; but the effects do not arise in proportion to the heat.

It should seem that as the heat is increased the power of generating heat in Animals is proportionally diminished * Thus it is observed by Muschenbroek that

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that Bodies on the application of heat expand more at first than afterwards. So the effects of heat rising from 60° to 70° are greater than from 70° to 80° . We find too that flexible bodies don't increase in their flexibility in an equal ratio to their increase of heat. For if we take Wax or Sulphur these by friction become Electrics, but by increasing this heat they incline to melt & become less Electric. May we reason from this analogy & suppose some such thing to happen in our Nervous power, the mobility of which may be increased by a certain degree of heat, but beyond that is diminished. Our blood too seems to be less liable to rarefaction as the heat increases— Probably the increase of Putrefaction contributing to the increase of saline matters in the blood may diminish the generating power.

Some of the effects of heat are instantaneous, some require a length of time, hence the effects of heat on our system are so much more remarkable at the end than at the beginning of the summer, and in warm climates than in those more temperate ones— so much depends on the duration of heat.

The case of relative heat arises chiefly from sensations, it must therefore depend rather on the state of the Nervous power than on any given force of the impression.

How

Animal Heat.

How far this is independant of absolute heat is ¹²⁷
not certain; it seems less certain than relative cold
is to absolute. In degrees below 62° the Impression
is agreeable & pleasant & therefore makes less Im-
pression. The degrees above that are painful & have
a stronger Stimulus.

But relative heat is particularly to be considered
with regard to its effects on Solids & fluids.

It expands the fluids more readily than it re-
laxes the solids. This however is different at
different times. Fluids in their dense state are most
liable to rarefaction, hence the greater effects will
rather be below 62° than above it; thus a change
from 60° to 50° will rarify the fluids more in proportion
to the solids than from 70° to 80° . There is another
reason for this - at 62° there is a proper proportion
or balance between the solids & fluids, below this the
solids are more contracted, above it more relaxed.
In this last case then the solids yielding more readily
will obviate the effects of heat. Inflammatory af-
fections & particularly Rheumatism depend on this
proportion between expanding fluids & contracting
solids. Hence Inflammatory Diathesis prevails
most in seasons & climates where the degree is
below 62° , and particularly in the Spring when heat
supervenes

Animal Heat

supervenes on the cold of the winter. Further 128.
heat increases the alcalescent or putrefactive
state of the fluids, it however in very few in-
stances shews putrefaction actually produced.

Animals exposed to a great degree of heat im-
mediately become putrid, but in ordinary states
of the atmosphere this will not happen tho'
it appears to do so.

Heat occasions an increased exhalation from
the lungs, wh^{ch} if reabsorbed is poisonous. The
perspiration is probably much of the same
nature. If heat occasions putrefaction it is ow-
ing to the animal being inclosed in a small por-
tion of air, so that this poisonous matter is
not allowed to escape. So much for the effects
of heat on the system in general. It will be easy
to understand what are its effects when applied
to particular parts of the system. Heat at the
degree of reaches ^{only} to the Rete Mucosum, pro-
ducing Blisters. At a higher degree it gives
Inflammation affecting the texture of the part.
at ¹⁵⁶ it coagulates the animal fluids, and some-
what higher it is an actual caustic.

With regard to Cold we have already fixed its
limits. We are exposed to degrees much more
below

Cold

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below 62° (that is in the atmosphere) than to degrees above it. Add to this that we can bear this extreme much better than the approaches to extreme heat.

Our reason is, that on the side of cold the power of generating heat is increased as the cold is increased; for the tension & firmness of the solids are now increased, wh^{ch} contributes to the generation of heat greatly. Besides this too the Exhalation of the body is intercepted between the body & the surrounding air. This is the foundation of Cloaths & houses in order to confine to our Bodies a certain portion of what may be called our own atmosphere, and thus not allowing the air in contact with our body to be much changed.

Further we guard against cold by Fire, but we have not these advantages on the side of heat. This is the first effect of cold when applied in a stream to carry off our atmosphere.

The Effects of cold on our System are

1. A Condensation of the Nervous power which diminishes Sensibility & Irritability.
2. A Condensation of the Solids giving more force & tension.
3. A

Effects of Cold.

3. A condensation of the fluids, thus diminish- 130.
-ing their expansive power.

The effects of heat pervade the whole system, those of cold affect only the surface, & don't reach further into the system than as the whole temperature of the body is altered which for the above reasons can seldom happen; hence the condensation of the nervous power seldom takes place; hence too we have no effect opposite to that of heat by which intestine motions are increased.

We must now mention another circumstance preventing our opposing the effects of heat & cold. Cold is as well as heat a stimulus which is suited to obviate the other effects of cold. We have frequently observed that there is in our system a constant tendency to restore its balance. This is a remarkable instance of it. Whatever tends to diminish the tension of the system if not in the strongest degree proves a stimulus & so obviates its own effects. Cold may also follow the case of relative sensation. If it falls below it proves a stimulus, & the more the lower it goes. Dr. Mifflinham observes that in falling the effects are always the same as whether from 80° , from 70° , or from 50° to 40° . He draws some conclusions from this wch

Action of Col

which cannot be admitted. The degree of change 131.
of temperature being given, the change in the
system will be greater according to the preceding
heat of the system.

Cold acts in two ways.

1. particularly on the vessels of that part to which
it is applied.

2. As a general stimulus to the nervous power, &
both these make it prove a stimulus to the whole
system. The sensation then may be equal in
whatever part of the scale the case happens.

The particular stimulus may be greater
as the heat of the body is greater, yet its effects
on the mobility of the nervous power will be e-
qual. — It is said that cold acting as a stimulus
is not to be considered in its highest degree, for
then it may either destroy the mobility of the ner-
vous system in general or may overcome the
balance so far as to occasion death.

We cannot impinge as Gaulies doth the sleep &
death wch happen in extreme cold to freezing,
as they occur long before the freezing comes on.
When cold is applied in such degree as to constrict
the vessels very strongly, it will have different
effects according to the state of the system & the
force of the circulation. But when applied in
such a degree as to overbalance the power of the
sensorium

Action of Col'd.

Sensorium its effects will always be the same.

Every one observes that the effects of the same degrees of cold are different at different times, & so in different persons at the same time. These effects are always corresponding to certain conditions of the body, which is according to the vigour of the system & the strength of the Sensorium.

We observe that the body is more exposed to cold in rest than in motion, this particularly appears in sleep. The same happens after considerable invacinations, after previous diseases, fatigue, excessive vexery, drunkenness. A state of fear also contributes to the same. — We must add to this Contagion which we observed to act on the Sensorium in the same manner as cold & fear.

We need not add how cold produces Fever. Cold as applied to the surface determines the blood to the internal parts, whence the Urine is increased; but in many cases this determination may be to the Intestines giving a Diarrhoea or promoting the Secretion of the bile. The determination to the lungs requires particular notice. What is the connection between these & the surface?

In every Accumulation to the internal parts the lungs must have their share, but there seems to be something more than barely this. — We must apply here what was before said of the Constricted solids & expanded

of Effects of Moisture & Dryness.
at Dryness

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expanded fluids. We have so many ways of guard-
ing against cold that its noxious effects do not so
oft happen. But when it does take effect we shall
have that proportion much altered - hence we may
understand the foundation of the Inflamm. & Deatheris;
hence too it appears why the Angina, Catarrh, &
pulmonary Inflammations constitute the chief In-
flamm. diseases, if we add Rheumatism too we shall
have 19 out of 50 cases.

The last observation to be made is that transitory
cold, tho' to a considerable degree will have less ef-
fect than a smaller degree long continued. This is
easily explained by the sensorium being prepared
to obviate its effects; hence cold with moisture
is so effectual that it seems to have a power of
generating cold. - Cold is remarkable for increas-
ing the appetite of hunger - heat diminishes it.
This depends on the Theory of Appetite, which is
not yet fully explained.

We have hitherto spoke of cold as occurring in the
ordinary states of the Atmosphere. The effects of
higher degrees will be easily understood by consult-
ing Gaubiers on this head.

We are next to consider the Moisture & Dryness
of the Air, and

1. Dryness. In the state wch dryness occurs in these
climates it is always salutary, and it is only when con-
curring

Moisture

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-curring with states of temperature above or below
62° that it can be noxious. When joined with heat
it increases perspiration, & thus the exhalation
of the more fluid parts ~~which~~ increases the Acremony
of all the internal Secretions; hence it is found to
produce various Vilious diseases.

When joined to cold it increases its effects, partly
by carrying off the exhalation, partly by that
exhalation generating cold, too constantly applied
to the surface. These effects are inconsiderable as
there is a stream of Air applied to the body; hence
we would explain the singular effects of North East
winds. These have been supposed to bring with them
frigorific particles, which we cannot admit. Their
operation then is to be derived from their dryness—
from the same Theory we wd suppose that tho'
dryness increases the effects of heat, yet it is not
improper but by its sudden exhalation it is one
of the means of tempering heat, and a moist warm
air affects us more than a dry warm one.

With regard to moisture we must observe that the
water of the Atmosphere is in two different states.
Air in its driest state contains much water, but it
is then so dissolved as not to affect its dryness. This
is only to be separated by a diminution of the men-
struum or of its density. But moisture in this state
is not attracted by the human body tho' it is by acids.

Moisture

Lamprosoma

2. But another state of Moisture is when it is diffused in the air - this diffused moisture the air gives to every body drier than itself - In this state it may be absorbed by the human body when that is in an absorbent state.

Hydrometers tho' they attract dissolved waters don't give us an proper Indication of the absorption by the human body. But it is the case with those that have been yet employed that at first they give a tolerable measure of the Moisture of the air, but not after a few days. To speak now of the effects of Moisture. The chief is the giving increase to the effects of cold, by giving occasion to the generation of cold & applying that constantly to the surface of the body.

Moisture with heat occasions an accumulation of the perspiration which keeps up the heat, by this too it relaxes the solids and will go on to expand the fluids.

Further, Moisture present in any portion of air is always a mark of its being stagnant, unless when it is immediately induced by a stream of moist air. The power of air as a menstruum to water has its limits, and the nearer it is to saturation the slower will it absorb our Exhalation, and the more readily will it admit of precipitation. - Any moisture that can arise from

Gravity of the Air

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from our globe, if diffused over the whole atmos-
phere will be dissolved in it, nor can it fully satura-
tate it. Stagnant air has considerable effects by its
moisture, but further also by its increasing putre-
faction. It is moisture which confines our respi-
ration about the surface of our body especially
as combined with Stagnant air. Add to this that it
increases the putrefaction of surrounding bodies. It
is probable that Contagions may be so diffused as to
become innocent, & that it only acts as accumulated
in a certain portion of Air.

We next speak of the gravity of the Air. The weight of
it on our bodies when the Mercury stands at 30 inches,
tho' we are not conscious of its pressure, is £30,000.
It doth not even act on liquids & only on elastic va-
pours - But there are many observations shewing
our bodies to be affected by a diminution of this pres-
sure - We may conceive our fluids & our intestines
to contain Air wh^t is kept in balance by the surround-
ing Air, & if this last is diminished it will be expanded
& give distension, and from this turgescence of the fluids
many harms may arise. Notwithstanding this spe-
cious reasoning many phenomena are not to be ac-
counted for this way. We don't feel any sensible effects
at mounting to a very great height - The French
Academicians ascended mountains where half an At-
mosphere was taken off, and yet there were no consid-
erable effects felt except on Respiration, and that too
only

Noxious Effects from the Contents
of the air. Exhalations.

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only in motion; hence it is scarcely credible that the falling of $\frac{1}{10}$ of an Inch ^{the whole weight} can have any great effects on our System.— This problem is not easily solved.

We don't know the state of the Air in our Membranes whether it is exhaled, how it is supplied &c, or whether it counterbalances the surrounding Air.

The great increase too of the pressure of the Air has very little effect, as we see on descending into very deep mines. Even in the diving bell the effects produced seem to be from the pressure not acting equally on the body. The effects then of the fall of the Mercury in the Barometer must be either referred to a change of temperature or to the effects on respiration. Some very irritable people are liable to Hæmoptoe on small changes of the pressure of the air. — So much for the qualities.

To speak now of the noxious effects of the air with regard to its contents.

These are numerous and of great variety if we consider the various exhalations from our Earth. The fossil kingdom supplies these very copiously which arise sometimes from very great depths. — Some false effects are attributed to these, as a person finding very salutary effects from following the plough & smelling the new turned Earth, &c. &c

The vegetables are a still more considerable source of exhalations. These not only furnish much matter, but it is considerably diversified by passing thro' the

Exhalations.

Organs of various plants. Animals too afford a large proportion of Effluvia to be taken up into the atmosphere. In certain places we may see the Fossil exhalations arise, as also the vegetable & animal ones. Another large source is from human sacraments &c of wh^e we have plenty here in Edr we don't know the effects of these in general, & their particular influence must be very uncertain.

There is certainly a power of mixture in our atmosphere rendering these various matters innocent.

There is still further the power of diffusion wh^e can render the most violent poison innocent. If we inclose a growing plant in a glass receiver it will in a very short time have its effluvia putrid, yet we don't know any noxious effects of vegetable exhalations as taken into the atmosphere. The most deleterious poisons are rendered innocent as appears from the state of the air near Lead mines which is very noxious six days of the week, but innocent on Sunday.

Putrid Effluvia are noxious to animals, yet even in these it is difficult to say in what circumstance they act; and when an abundance of putrid effluvia produces noxious effects it appears to be a putrid matter of a particular kind, and in a very concentrated state.

We must add that probably what is attributed to putrefaction relates only to a particular part. This is Mephitic Air, wh^e is a very virulent poison, b^may therefore in smaller doses occasion various diseases.

This

This Air arises from various sources. It is the spe- 139.
cific fossil exhalation occurring in several mines.
It arises copiously from all burning bodies, all
animals, all putrefactive & fermenting bodies.—
From one or other of these sources all stagnant air
that has communication with other bodies becomes
impregnated with Mephitic Air.

The Air is not corrupted by Stagnation, but only
in consequence of communication with other bodies.
This then demands most strict attention. We know
it only by its sensible effects on Life & Flame. Yet it
is probable that it is variously modified so as to have
different effects on the body.— In what circumstances
are these noxious qualities of the Air induced? Or,
what favour these Impregnations? What occasions
Heat, Cold, Moisture, or Dryness? These belong to various
other branches of Sciences.

We next consider

Noxa a Cibâ et Potu.

The Animal Economy is suited to such a variety of
food that by habit it can be reconciled even to those
that are noxious. Further, food of opposite natures pre-
vents each others effects. There are also certain pro-
visions made by nature to prevent these effects.—
Many kinds too of excess in Diet don't operate till
they have continued long in the System.

(We shall proceed to consider the subject in the
order of Dr. Gaubius, who 1^o considers

Errors from quantity

1. The Errors arising from quantity.
2. Those from the disposition of the Solids & fluids.
3. Those from their qualities.

To this he adds the Errors of foods taken in with a view to Mastication, & partly, the difference of time in eating & drinking.

Now 1st of the Errors from Quantity.

We cannot ^{consider} this as affecting the Stomach, & thro' that the whole ~~whole~~ system immediately. — For

1. Aliment considered in quantity, first affects the measure of the Stomach.

2. It affects the Stomach with a view to assimilation.

3. Thro' the Stomach it affects the System with fever.

We have no measure of the proper quantity of our Aliment, but the satisfying of our Appetites. — This depends in a certain degree on fullness; it has therefore

a manifest connection with the bulk of our food. —

What the due degree of distension is is difficult to say, but it is different in different Systems. We can gradually accustom the Stomach to receive more & more food; thus it creates an artificial appetite which is attended with the effects of Pethora. —

We may observe in general that Vegetable & Animal food differ greatly in this respect. — Vegetable food has a less proportion of nutritious matter than Animal. The large distension then by Vegetable food has not equal effects in producing Pethora with that by Ani-

mal

Pathol. S. 150.

Decreases in quantity.

mal food. This gives an important lesson in point of our diet. If then we take vegetable food it will fill our Stomach without inducing plethora or other effects in quantity with regard to the measure of the Stomach. If the Stomach is very largely distended the Pylorus is raised up, which prevents the Aliment from passing off so easily, and further its bulk is still increased by the fermentation going on there. Hence it must be thrown off by vomiting. It will also have all the effects mentioned by Dr. Gaubius. He joins to this what we consider separately viz. how this distension prevents assimilation by causing an over distension of the muscular fibres & preventing a proper discharge of the gastric liquor, by the quantity of the Aliment being in an over proportion to these liquors &c &c.

Further, excess in quantity prevents an easy digestion — This produces various effects on the system, & among the rest Fever. This however will depend much on the nature of the food, as being more stimulant, more difficult of solution & perhaps of Assimilation also. — We know the bad effects of it when concurring with other febrile disorders: But independant of these it has a great share in wearing out the system. — It is surprising that this is omitted by Gaubius.

Lastly, excess in quantity occasions plethora. The measure of the proper quantity depends on the secretions

Defect of quantity,

due proportion between fluid & solid Diet.

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Secretions & excretions, and if these are properly balanced these effects will be greatly diminished. But the more food passes thro' as the more all our functions are exercised which must wear out the system. — Further the balance of people living in this manner is very nice & easily disturbed; tho' it has been said that more or less food is of little consequence, yet it is allowed to be of great consequence where there is a tendency to plethora. — Celsus has therefore erred in advising them to take in more food, if at the same time they use more exercise.

On the other hand, defect of quantity may be attended with bad consequences, but we are disposed to think that this must be carried to a very great length before it produces them, and that it seldom in fact happens unless from necessity.

We have before spoken of the effects of the spontaneous degeneracy of our aliment & the necessity of fresh supplies. There is much fraud in the cases mentioned of excessive abstinence.

We shall next treat of the due proportion between the fluid & solid diet.

That there is a due proportion necessary to perfect health is certain, but what this is, or what the effects of a deviation in this respect are is difficult to say. We think that this must be carried to a very great length before it is attended with the bad consequences here)

Qualities of Food. Gaub: § 457

1st Chemical, as in

- a. Consistence
- b. Mixture

Faults from Consistence

- 1. Vivid.
- 2. Oily.

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here mentioned from changing the state of con-
sistence of the fluids, or rather that it can scarcely
ever have this effect - An over proportion of solid
food may perhaps induce Pethora, that of the fluids
may prevent it and be rather healthy.

Dr. Gaubius next considers the Qualities more
particularly. And first the Chemical ones or the faults
of Consistence & Mixture. Those erring in consistence
and liable to give Spissitude to our fluids are of two
kinds, Viscid and Oily. When a cause acts only in
the internal parts of our System we are liable on
many accounts to be mistaken with regard to its
operation, especially if we judge of these from the
sensible qualities they exert without the body. We
must therefore be cautious in supposing the qualities
of our Element to take place in our fluids. This ob-
servation particularly applies to viscid food. Nine
tenths of Mankind live on Larenacea, and yet we
discover no bad consequences from this.

We would not refuse the existence of viscid food
but we don't know when it doth or what are its
effects. Something of the same kind may be said
of the oily food. We are more ready to think
that oil doth not retain its proper form in our
fluids, and that it appears in the Cellular Membrane
it is excreted by the powers of Secretion. It seems
probable

111.

probable that the Oil enters into the composition
of our fluids as a mixt, yet as over abundant
in the mixture it may be the cause of Pethora,
Obesity &c Dr Gaubius has a particular Theory
here about his Mucus Iners, the existence of which
we entirely reject. These oily matters degenerat-
ing may introduce a vicious acrimony into our
fluids. With regard to Oils in their rancescent
states we are still more uncertain about their
effects and they act very differently on different
stomachs. Perhaps their effects are confined to the
Stomach, & if the Stomach can bear them they will
perhaps have no farther effects on the System. To
consider now the faults of our Element with regard
to mixture.

We shall first consider our Element as Vegetable
or Animal. The vegetable is to be considered as
Fermentable or Fermented. It is all capable of
vicious fermentation & undergoes this in the Sto-
mach. Most of its noxious effects are to be at-
tributed to what happens during this fermentation
in the Stomach. There is then a Gas Sylvestre pro-
duced, which is absorbed & disguised by the Saliva
and other fluids according to Dr Pringle. But in

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in certain cases, as if too great a quantity of fermentable food is thrown in, or these fluids are not properly applied, this gas sylvestre may take place. This is chiefly a Mephitic Air, and as such air destroys the Mobility of the Nervous fluid we may easily conceive its effects. It is a very expansive fluid and expands very unequally whence unequal spasmotic constrictions in the Stomach attended with distension, vomiting &c &c. If it gets into the Intestines it may produce Diarrhoea, Cholera Morb. &c What sort of food chiefly contributes to develop this gas sylvestre it is worth while to consider. Sugar is the very basis of fermentable matter & so may be easily supposed to have this effect. Gaubius goes further and supposes that it attenuates our fluids. If carried in its entire form there it might like other neutral salts have this effect; but we cannot suppose that it is so. As to their alimental effects these are properly to be considered as they contain more or less air. The Leguminina seem to contain more of this than the cerealia. Veget. Aliment seems more liable to remain long in the Stomach, and to produce this high state of fermentation according to the firmness of their texture.

(W)

We have spoke of the Gas Sylvestre as a Mephitic Air. This probably is variously modified as variously impregnated perhaps with some subtle acid &c

To consider now fermented vegetable food. tho' we refuse the existence of Acid in our blood vessels, yet as taken in in too large quantity and so entering into the composition of the fluids they may have those noxious effects. What these are we don't know. They unite with the Bily parts & dispose them to pass off by the Secretions, whence their use in preventing or removing Obesity. Acid probably gives our fluids more of a saline state. With regard to their Acescent state we would allow that they may dispose our fluids to deposit their earth, whence Gout and Calculus, but even this is not without doubt. For in the Gout there seems a great deal to depend more on a particular constitution of the System disposing it to produce fluids of such a nature, than on the effects of Acescent food on the fluids. As the fossil so the vegetable Acids cannot in all probability be taken in in sufficient quantity to produce any such effects. In some gouty persons a bottle of wine will bring on a fit of the Gout. As so many Phenomena show the connection of the Gout with the Stomach

we

1A7.

we would rather attribute this effect of their operation immediately on the Stomach than to any Acrimony they diffuse over the whole System. As Fermented liquors contain Alcohol, they are next to be considered.

These as containing some matters not properly fermented they may still be supposed to act on the foaming of Accesents, but this will not extend beyond the Stomach. A matter as containing Alcohol doth not affect either our Solids or Fluids. Alcohol coagulates the Fluids out of the body & hardens the solids. But these effects are always frustrated in proportion as the Alcohol is diluted with water which it will always be in our System so as to have more of these effects. Wine then or Brandy must be supposed to act merely on the Nervous System, which it doth first as a stimulus afterwards as a Narcotic. The increased action of the Heart & Arteries induced by it is from some unknown cause determined to the head, whence its sensible effects there. It afterwards impairs the Nervous power producing Inertia & a state of Sleep during which the Stimulant effects subside, but the body is left weakened, irritable, anxious, & exposed to Potentia Noctentes. These are the effects of

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of the Vegetables as Acescent which probably contains the wholes of their effects. Gaubius further considers their Alcalescent effects, but these we cannot allow. He considers them with more propriety as Aromatics, but some of the effects imputed to them as such cannot be easily supposed. Most of their effects are to be attributed to their Stimulus on the Nervous System. By this they promote the Action of the Stomach which prevents the Acescent fermentation from running too high; hence they are so proper in the warmest climates. By their repetition they may weaken the tone of the Stomach but what effect they induces on the System is less apparent.

We are now to speak of the noxious effects that may arise from our Animal food. This as containing the most nutritious food has the greatest tendency to produce Plethora. It is too the chief source of an Alcalescent state in our fluids. In what circumstances this effect of animal food particularly occurs is not easy to say. It will do the more as it is more or less putrid before it is taken in.

It appears probable that without a cold climate obstructing perspiration, or some such cause, this animal,

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Animal food will not induce putrefaction, per-
haps even would not do it then if it was not,
for the common salt in salt provisions, wh^m may
have a share in inducing an Ammoniacal state
in our fluids. It is proper here to determine what
are the effects of over proportion of vegetable or
animal food in our aliment. It is plain that
man is intended for both, and many instances of
persons subsisting long on one or the other without
harm. It seems agreed that man cannot live on
animal food alone; but it is doubted whether
a man may not subsist on vegetables alone se-
veral instances of this in fact as in the Bramins
who are said to enjoy very good health and live
in general long lived; many instances too of par-
ticular persons in these countries. It seems probable
then that if they avoid the bad effects that would
arise in the primo via men may subsist on veget.
food alone, but it may be doubted whether this
would fit men to undergo the labours of civil
Society. Perhaps Animal food is necessary to
enable men to resist several potentia Noxii acting
on their System, especially cold, hence more Animal
food is used by men as they reside more from the
Torrid Zone. We conclude then that vegetable food

is sufficient to support the system independant of the affections of the prime via, and that in persons of a sedentary life, in a temperate climate, & defended by cloaths & houses the less animal food is used the better

We shall next consider the sensible qualities of our Aliment as heat & cold. It is proper to move a question here, what are the effects of food a little below the Temperature of the human system in opposition to food taken in below 62° & appearing cold. It is sufficiently obvious that drink taken in cold is at first a Stimulus to the Stomach then to the whole System, & is very Salutary. Drink approaching near to the human heat doth not give this salutary stimulus. It has been even therefore of relaxing the Stomach & System, tho' this operation is difficult to understand. It seems notwithstanding some reason then that an eminent Physician laughed at warm Tonics given to warm the internal viscera. Yet we cannot agree with him, but suppose that any additional heat will occasion an accumulation of heat in the internal parts which are always loosing to the external ones as these are to the external Air, & that the relaxation induced by warm drink is owing to the increase of heat. The bad effects of Tea have oft been handled,

but,

but seem much exaggerated by Dr. Gauvius. Many of them would arise from an equal excess in the quantity of cold water. Warm Water considered in any respect has not the effects here attributed to it. The chief effect of Tea drinking is to be referred to the herb itself. In a strong dose it may prove Emetic, and all such matters seem pernicious to the system. It has particular bad consequences in relaxing the tone of the Stomach, and in producing the effects derived from thence. But many of the effects mentioned here arise from a complicated cause, Sedentary life, warm chambers, excess of venery &c.

Now of the effects of Cold. When cold liquor has, the effect of Stimulating the fibres & constricting the Pores & it will have the other effects mentioned by Gauvius. But from its various uses with impunity it appears how much the effects of cold depend on the relative state of the body. It is a matter of importance to determine when it is proper in fevers to throw in cold or when warm drincks. We generally avoid cold drink in these climates but it was much used by the antients. We would say that as cold drink has remarkable effects in inducing Inflammation in

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in Inflammatory states the use of it would be dan-
-gerous. On the other hand in all general fevers
cold drink is the most proper. Accordingly in Rus-
-sia it has been practised to use cold bathing to cure
Fever particularly the petechial ones. On the whole
cold drinks are more proper in warm than cold
climates, in summer than winter.

There remain only now two particulars, as 1. The
effects of too little Mastication. The want of this,
must retard digestion & by keeping the Aliment too
long in the Stomach may have the effects imputed to
it by Gaubius. The last particular with regard to
diet is relating the time of Eating & drinking. The
natural rule of this is the presence and absence of
Appetite, but the affairs of society require stated
times which our System easily accommodates itself to.
So frequent meals besides the effects here mentioned
will have that of increasing the fever which we said
prevails at this time. It has been disputed what is
the most proper time for the principal meal. This ought
to be before the body has been properly exercised.
The chief exercise of the day ought to be over for this
reason too that exercise is not proper on a full Sto-
-mach. Exercise of the Mind equally prevents digestion.
It is reckoned very pernicious to sleep on a full Sto-
-mach, but we find a natural propensity to sleep
after

after a full meal and this extends to other Animals. The bad effects of full suppers must rather be imputed to some other cause. We have before observed that there is a constant recession of Fever in the evening in our System, and the aggravation of this fever by a full supper will perhaps account for this problem.

We proceed now to speak

De Intempestivo Remediorum Usu.

This is properly confined by Haubies to the improper use of drugs in general, nor can it touch their particular effects. It speaks only of the mischief arising from the use of drugs when they are not necessary. Medicines don't like Aliment enter into the composition of our Solids & Fluids, but alters their state and condition greatly. If the body is then in the best state imaginable this change must be for the worse. It is alledged in opposition to this that some Medicines act only on the noxious matters they meet with in the System, & if they meet no such pass off without operating at all. This is said to be the case with Absorbents; but this is fallacious, for Acidity is always present in the Stomach. Its presence is necessary to Assimilation, but when too great a quantity of it is not present it is taken up by absorbents this must be attended with

with bad consequences; accordingly absorbents are said to promote putrefaction. The position extends to all other medicines, & that are none which are capable of doing good that cannot also do harm. But further, medicines in small quantity in general make very great changes on the System and are justly observed to approach very near to Poisons by Laubius. This will make us very cautious in their use when they are not necessary. Even Meds. capable of no great effects may be hurtful. In the first place the body being habituated to them will not have the benefit of their effects in sickness. A good old observation is, that the first Administration of blood letting seldom fails to cure the disease. But further, the use of Stimulants makes us insensible to natural Stimuli. This often happens in persons who have accustomed themselves to the use of Durgatives. In general the use of all Meds. induces a variety of habits which become necessary and expose us to various hurtful causes. *Duge medicos & Medicamenta si velis esse saluos,* was the admonition of a German physician. The opposite conduct of this induces various ills. Persons on the least change of their system have recourse to Physicians when these changes would have been spontaneously obviated & corrected by the vires nature.

Nature conservatrices. But it is said that the 155.
predisposition may be corrected by the means of
Physics; this however is best done by Regimen and
not by Medicines. It would be worth while to
consider whether that variety of life recommended
by Celsus is to be followed, or a strict regimen suit-
ed to particular predispositions & particular
times of life; But our time will not allow of
this.

We proceed now to speak of Poisons. We cannot
speak much of this without entering into too large
a detail, so we must speak of these in general.
The first thing to be done is to limit what are Poisons.
Perhaps we must be contented with the vulgar
notion that Poisons are such as being conveyed
into the body in small quantities have a tendency
to destroy life. Gaubius seems to exclude Mechani-
cal poisons in his definition. It were to be wished
that we could determine what Poisons act on the
nervous power. The enumeration of Gaubius is
extremely correct; his Mechanical poisons must
be excluded if we allow a vis singularis to poisons.
The next class is of the Aeria chemica. These shd
be confined to theausics & Corrosives or such as
have the power of destroying the texture or
mixture of the system. Where these directly
destroy

destroy the part to which they are applied we can-
not consider them as poison. Neither can we in
another case when they affect the whole system in
consequence of an affection of a particular part,
to which they are first applied. The 3^d head is of
those possessed of a remarkable putrefactive power.
Any substance that is introduced in small quantities
has the power of assimilating the mass of fluids
and making them putrid may be allowed to be a
poison. Some are supposed to affect the mixture
of the fluids as Laurel water. The greater part
are such that acts as ferment. We would doubt
this much whether any can act by chemical mix-
ture. Even the ferment seem to act first on the
nervous power, and in consequence of the atonia here-
by induced dispose the system more to putrefaction.
What follows are such as act on the nervous power.
The first are the Astringent Poisons observed in Me-
tals and particularly Lead. These induce constric-
tion on the part to which they are applied, & act
more readily on the living than the dead fibre.
Their effects are propagated from the extremities to
the origin of the Nerves. This constriction is with-
out any considerable stimulus diffused to the rest
of the System in which they differ from Narcotics.

The

The last are what immediately affect the vital principle. Of these the chief are the Sedatives and Narcotics whose effects are diffused over the whole Nervous System. But Gaubius observes that they may act in other ways besides the Mobility of the Nervous power being destroyed; his Observation seems confirmed by the Phenomena observed of various poisons. On the whole of this subject, would observe that Dr. Heberdon has given lectures on this subject in the College of Physicians. If he has not made any great discoveries he has corrected several Errors. I would adopt his division of Acrimonious & Intoxicating if he did not contain several of the Chemical Acrids under the Acrimonious.

Dr. Gaubius next mentions two principal heads of Miasma and Contagion, which if to be considered as Poisons are of the utmost importance in Medicine. These two terms ought to be carefully distinguished. Miasma implies any contents of the air which may be noxious to the human body. It seems to be then any corruption of the air. Where Miasma is used in opposition to Contagion we must either exclude communication or suppose it unknown. Contagion always implies a matter in the air wch when

Mul-158

when introduced into a body has the power of mul-158
tifying itself so as to be communicated from
that to another body. In many cases we are un-
certain when the disease arises from Miasma
or Contagion, and therefore refer it indiscriminately
to either; even Sydenham uses the term Miasma
often than Contagiones. But the extending of
Miasmata too far is attended with Errors in prac-
tice and causes unnecessary Fear. Most Epidemics
depend rather on Contagion than Miasmata since
we can in general have them as arising from con-
tact. Even the Miasmata in the Air have probably
arisen originally from the human body or from o-
ther animals analogous to it. Even the effluvia from
a sound human body may be reabsorbed by other
persons and prove hurtful. The Effluvia of persons
engorged are oft born by them with impunity probably
from habit when they are very prejudicial to others.
This explains the use of Contagions which probably
arise from human bodies or those of similar ani-
mals and which may perhaps be innocent to the
persons from whom they arise. The Effluvia are
changed by mixture or diffusion in the Air, so
that it is probable they are never carried far from
the person affected, hence they are accumulated or
concentrated

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concentrated in these chambers, which will be more or less according to the free ventilation of these chambers. We further find the contagion adheres remarkably to the clothes &c of affected persons and for a long time adhering to them; hence contagion is chiefly propagated this way. Dr Gaubius insinuates that Miasmata may be from all the sources affording Exhalation to the Air. This is possible, but we must not think of possible sources, for from the powers of mixture & diffusion in the Air they will be connected. We have already said that the various contents of the Air may be referred in general to Mephitic Air. We attempt to correct this chiefly by diffusion, because we know little what mixture can do. This however deserves our most serious consideration; if we can mix the Mephitic Air with common Air we may prevent its bad effects in general. There is much Mephitic Air at the bottom of wells. But this is ^{connected} merely by alternate motion of Buckets going up & down. This may have consequences on our practice in several cases, but this mixture with common Air cannot always be procured. No matters that have so much the power of fixing Mephitic Air as burning

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burning bodies particularly Sulphur. This appears to be a curious problem how mallets who themselves afford this Mephitic Air can possess the power of rendering it innocent. The fact however is evidently proved in the case of fermenting liquors where a small quantity of burning Sulphur will immediately check fermentation. The Mephitic Air has various bodies adhering to it which may be affected by the Acid of the Sulphur Fumigation with it would be a convenient application to destroy Mephitic Air. The burning of gun powder has also been used, the explosion here by the strong agitation it gives to the Air probably shakes off the Mephitic Air more powerfully. In a Sea Fight last year there was a ship with Contagion of Board, which subsisted in spite of all the means used to correct it. 28 Barrels of Gun powder were used in that ship, and the contagion appeared no more after the fight. So far as Contagion acts as a poison it confirms our Theory with regard to Fever. Some contagions act more readily, others not without the concurrence of Heat or Cold according as the vigour of the vital principle is more or less. It is observed by writers

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writers on plagues that new married men are
more exposed to the plague; it is probably owing
to the relaxation of the System. Dr. Gaubies pro-
poses several curious questions here. An omnis
Contagio animata? we cannot admit that they
are as this has been observed only in a few spe-
cies of Contagion; besides Contagion may be both
the cause of the effects on the Nervous power of
fermentation in the fluids, as also of the production
of the small Microscopic Animals observed, nor
are we to infer hence that such Animals are
the cause of all these effects. With regard to the
next question we cannot conceive that the Im-
agination can have any effect on the fermentati-
on of the fluids. All the Stories told of this kind only
show that Fear is a very strong concurrent cause
with contagion. With regard to the Pabulum we
see them act uniformly & steadily, but cannot
therefore suppose them of the same immutable
nature. Tho' an Antidote to particular Contagi-
ons may not be impossible, yet it seems equal-
ly improbable with the Philosophers Stone. How
Contagion propagates itself is a Mystery, but
this is in common to all Ferments. Gaubies is
puzzled to find out why these Ferments act only
on

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on the living body. We may attribute it to our fluids suffering some considerable modifications from the states of the vital principle. Another question should be taken notice of here. If contagion acts as a ferment on the fluids these after once undergoing this process will not suffer it again. This is easily explained in fluids ^{out} of the body; but the fluids in our body are so oft changed that we might expect them capable of undergoing the same fermentation with those before them. May we impute it to Impressions on the Nervous power, becoming weaker & weaker till at last they are none at all. The fact is undoubted, but persons are attacked with the Plague more than once. Shall we say then that the plague tho' of the same general appearance has particular modifications at each time it returns so as not to contradict the general position.

As to what follows our time will only permit us to select those particulars in which Gaubius is to be reprehended. The operations of the mind may be considered as simply intellectual, or as attended with volition. This gives the two divisions of Gaubius. With regard to the operations of the intellects

in intellects. It is probable that the Soul in thinking is under actual motion of its material parts. But thinking is undoubtedly connected with the material part, nor is any separate independant action of the Soul to be omitted. The motions of the Sensorium in thinking have their proper measure. If the motion is excessive it may have several pernicious effects on the System. Dr. Gaubius goes further in pointing out what these effects are, but he uses a number of loose terms & several hypotheses which cannot be admitted. The whole is that excess of motion in the Sensorium weakens its own power and so that of the whole System. Gaubius adds properly that these motions prove a stimulus to the Sanguiferous System; further, that when the Mind acts intensely Muscular motion ceases in proportion to which the Literatorium morbi is to be imputed.

The 3^d fact is that variety of Studies renders excessive study more tolerable. We may easily conceive that the action of any one part for a longtime will affect the Sensorium much more than when alternately different parts are used. Further, Occupation of one single object must be hurtful, because attention to that has the effect of restraining the nervous

Nervous influx into other parts. Thinking is a stimulus to the System, and so it might be supposed that the want of this will occasion the System to languish; but no such thing seems to prevail in fact, the reason is that Muscular motion is sufficient to preserve the powers of the System in a proper state, or that the external impressions are sufficient to prevent the System from languishing.

We now proceed to the

Vis Noxia Animi Perturbationum.

Here the effects are more evident. To give a System on this subject. The Passions may be considered in two views, first as they are agreeable & pleasant, or disagreeable and painful. The agreeable & pleasant are always Stimulant, the disagreeable Sedative. But the Passions may also be considered as actual or restraining from actions; those leading to action are properly Stimulant, the others manifestly Sedative; their effects are variously modified according to their degree. Again, few of our passions can be considered in this simple view, most of them are very complicate. Love is sometimes full of Hope and Confidence, sometimes of despair and jealousy. They are also very complicate if considered as actual or restraining from action, thus fear may have different

different effects, a coward obliged to fight is as
very dangerous enemy. These are the foundations
on which we are to judge of the effects of the pas-
sions; further whilst the passions are Stimulant or
Sedative to the whole System they have oft a parti-
cular relation to various parts. This might induce
a Discession of Physiognomy and some other particu-
lars, but we are restrained by time.

We come now to speak of the

Excessus Somni et Vigiliarum.

The Exercise of the Mind and body have their stated
measures not only with respect to degree but also
to duration. Excess of either of them must be hurtful
to the Stomach. The same principles apply to the
excess of duration as that of degree, excess of waking
overstrains the muscles employed to keep the body
erect, overstrains the Sensorium, occasions waste
of fluids & so increase the Acrimony of the remain-
der &c. Excess of Sleep induces a Torpor of the
Nervous System, by diminishing the action of the
solids on the fluids it prevents their motion and
increases the Laxity of the Solids, it diminishes
the Secretions &c &c A question occurs here about
the time of Sleeping & waking; all times are not
equally fitted for these purposes. The very rest
of

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of Animals in the night gives silence, together with
the darkness, & the cold of the night air too admo-
nishes us to sleep then. But further the heavenly
revolutions have some effect in producing an ana-
logous revolution in our system. We have always
an accession of Fever and quickened pulse soon after
noon & another soon after midnight, but this is
not confirmed by a sufficient number of facts to
prove that this cannot be connected by habit. It
appears however that the Sun has very great
influence on us. The body then should be at rest
in order not to be irritated at this time of fever wh
is greatest soon after midnight. Those who keep
late hours tho' they take an equal proportion of
Sleep never have so hale healthy a look as those
who keep earlier hours.

We go on now to the

Excretio et Retentio Inordinata.

We have before spoke of the effects of an undue ba-
lance in general, what remains to be considered
here is when the Secretion or Retention are faulty
with respect to any particular fluid. These however
rather belong to the Actions Dose and come under
the head of symptoms rather than of causes. I shall
only give you a few cursory remarks.

With

With regard to the Saliva it is known to be necessary to the assimilation of our food; this assimilation then will be imperfect if the Saliva is diverted to another course; accordingly when the Saliva is thrown away the Marks of Indigestion appear & particularly of Acescencey.

The want of a small quantity of Acescencey can not affect our Mass of fluids as supposed by Guy-
bie, he considers Constiency in the view of har-
dened Fæces solely, but this do not exhaust the
whole effects of Albus Constrictor & Tarda, the lat-
ter brought on induces a Torpor in the peristaltic
motion of the intestines, and this is propagated to
the Stomach, hence this has so considerable a
share in all the Symptoms of the Hypochondriasis.
He next considers the effects of the interrupted
excretion of Urine and of its accumulation in the
bladder; he should have added to this the accumu-
lation in the Ureters and Kidneys. The effects are
such as flow from its passing out by other pa-
ssages or inundating other parts particularly the
brain without the least marks of Acrimony.—
On the subject of perspiration he is very short.
Its effects are chiefly to be confined to the Segments
or to the Diminution of the quantity. The effects are
those

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those of the quantity and quality, those ascribed to the last are difficult to be conceived. Some of the symptoms ascribed to increased perspiration as Animi deliquium, Morbus Substancialis &c seem not to be well founded, sweating has the same effects but in a higher degree. The aptitude of persons to catch cold during sweating may be impeded by increased sensibility by the heat. When the balance is thrown very considerably on the external parts, as by sweating, a sudden check to this will have more considerable effects. The effects of the Immobidicium Seminis profluvium are put on a proper footing by Laubius and not imputed to the loss of any particular spirituous humour. The fullness or emptiness of the vesicula seminalis has very great effects on the tension & laxity of the system; it's opposite the Abstinentia nimia is a very rare occurrence in the Economy. I have seen instances of Salpyriasis & nymphomania, but these occurred in persons rather addicted to the other extreme. The effects of the Secretus lactis are to be attributed merely to the quantity; if it has any effects on the vis Nervosa it must be by affecting the tension, the suppression of usual evacuations formerly explained

as producing Pethora. Its opposites will come 169.
more properly under the head of blood letting.
What next follows on cellular concretions we
shall endeavour to speak of more systematically.

De Calculi Origine et Nocumentis.

Calculus concretions can scarcely be supposed to be collections of matters before diffused in our fluids; most probably it is a separation of matters before dissolved. With regard to diffusion even in the prima via we may observe that diffused matters are less apt to form solid concretions & rather fall down in a loose powdery form. This must be the case in the prima via appears from the quantity of diffused matters which must necessarily be in them; this will easily appear from the quantity of dust taken in, yet concretions are very rare there; ^{These concretions are commonly to a nucleus} but further there, and such are commonly from solution. We set out then with this proposition that they were before dissolved in the fluids. Dr Gauviers finding them to be called earthy concretions & insoluble in water after their separation is at some pains here to obviate this prejudice. There are many similar instances

more than third of all - mostly given over to
political debts to God with others placed in
the ministerial vaults) so much less time left
for government more to handle at reasonable rates

THE PROBLEMS OF THE INDUSTRIAL STATE

Conditions of labour are violated and violated
in such a way that there is no alternative
but to take a civilizing hand about two
thirds of the time.

(a) If we would apply to the Absentee System any
thing like an Elective Attraction (as seems very likely
to take place) they might be admitted.

stances in natural history. It is then strictly dissolved matter, how is this separated? The most considerable means of separating dissolved bodies from their menstrua is by cooling the mixture. By restoring the heat of the wine we can make it dissolve again the sediment it before deposited; but neither the cause and therefore not the effect can exist within the body so as to account for such depositions. 2dly dissolved bodies may be separated from their menstrua by evaporation. Nothing of this kind can strictly take place in our bodies.^{as} But stagnation abstracts the fluid parts and must therefore either be supposed to separate diffused matter or to have some effect in the way of evaporation. Another way of separating dissolved bodies is by abstraction of air from the mixture; in like manner addition of air in some cases occasions precipitation; both of these may take place in our bodies but we know nothing about it. A fourth means is by precipitation or elective attraction. The attraction of adhesion seems sufficient here to occasion precipitation, thus the application of certain dry & solid substances, not even such as absorb the dissolved matters, seem to give occasion to precipitation. This seems

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seems to take place in the Urine particularly. Any extraneous matter getting into the Bladder becomes a nucleus to which the saline parts of the Urine adhere. This is the chief means of increasing urinary concretions and will account for many of them; but in most concretions we must still look for some other cause. 1^o We may conceive that any part of the Inner surface of the urinary passages may become dry, and in this state it will answer the same end with the extraneous body just mentioned. An analogous instance to this in the dryness of the blood vessels occasioning Polypus, so Inflammation of the kidneys may occasion a concretion which will lay the foundation of larger ones. But are there not other causes besides these? Those commonly supposed are not touched on yet. Let us suppose the Urine to become a supersaturated solution, suspending the whole during motion but letting it fall on rest; this is what is almost constantly supposed by Dr. Haubius. But there is a considerable difficulty in this, for we know no similar instance in Chemistry of a solution not supersaturated depositing its contents on rest; but in the blood we suppose the coagulable lymph to be dissolved in the serosity, a part however is only diffused, and on rest this is deposited. But

admitting

These Cases may either be 1^o a particular state of the Mass of
Fluids producing a large quantity of the Matter thus to be
passed off by the Urine; or, 2^o A particular state of the Kidneys
whereby they are more disposed to wash off this matter. That
this Supersaturation takes place in the Blood is scarcely to
be admitted for the reasons here offered.

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admitting the possibility of this case it would be
very difficult to assign its causes. These will either
be the secretion of a large proportion of the matter
to be suspended in the urine or the greater aptitude
of the kidneys to wash this matter off. The first is
possible, but we don't know when it happens or
from what source. It doth not depend on any par-
ticular element, we suspect Dr Haller's observations
that calceuli are most frequent in England, Holland,
& France, and impute this entirely to the greater
number of operators in those countries; but the cal-
ceulus diathesis happens even in fatigues of women
who never showed any such disposition themselves,
it is not more frequent either in the Caledon countries
of England or on the borders of the Rhine. If from
supersaturation, we should expect them more fre-
quent in different parts of the body; a combination
of calceuli in different parts is a very rare occurrence.
It doth not depend then on supersaturation in the
blood vessels; but supposing calculus diathesis to be
owing to the fluids it is very difficult to say
whence or when it arises. Laubies talks of a Tet-
raecum principium, but we neither know the fact nor
can conceive its effects; much however has been
talked of Insoluble Earths and petrifying waters,
accordingly

accordingly they are carefully avoided, but this is a remarkable fact that undoubtedly these petrifying waters give relief in calculus concretions, and are really lithontriptics; the reason is from their absorption of acid. But Dr Gaubius is obliged to have recourse to another matter Acidum in terra defixum, but all this is imaginary. We have a stupile composition of Acid and Earth, viz. Allum, but there is no proof of any such prevailing in our system. Dr Gaubius always hints at this which is a mistake that earthy salts are more liable to separate from their menstrua than any others. This cannot agree in the least degree to any except Selenites. Tho' this is present in the waters we take in there is no proof that this is taken in in a supersaturated state which yet is necessary to produce calculus concretions in the body. Various causes of the precipitation of these saline matters in the bowels of the Earth, but as those cannot be transferred to the body it is probable that calculus concretions don't depend on these M. supposed by Dr Gaubius. The greater part of the remedies employed to cure these concretions are absorbents of acids. But yet there is no proof that these act by decomposing the stone, & their operation is quite a mystery.

It is time now to take notice of the 2^d hypothesis, that concretions

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Concretions may depend not on the state of the Blood
but a particular condition of the Glands. It seems pretty
certain that there are constitutions which will form
a stone out of any Element or blood. This is probably owing
to the affection of a particular part, since we seldom
find combinations of Calculous Concretions in different
places in the same person. It is true that this particu-
lar affection may depend on a general state of the
system. The gout is a disease of the joints but still
has a particular connection with a certain condition
of the system. The same may be supposed of these con-
cretions, and more especially as they are very intimately
connected with the Gout. This then appears to be
the most frequent case in Calculi, and it is this we
are to enquire into to account for their generation. We
must be satisfied with having brought the matter to
this point, I shall observe only that it will always
be dubious whether the remote causes Accescents
furnish the calculous matter, or only act on the
calculous diathesis. I know an instance of a Gouty
person who on taking a little vinegar into his
Stomach is seized with a Gouty Paroxysm. This
will make us very difficult of admitting that
Accescents furnish the calculous gouty matter. There
is no such instance of a supersaturated solution as
above

above shape except in the blood. The matters diffused here must in several cases pass off in this undissolved state in consequence of increased impurities, debauchery. If there are follicles in the secretaries it may stagnate there and give occasion to concretions. This indeed is hypothetical, but Dr Hallett will scarcely allow it to be such and produces several facts in support of it. There may be such an inflammatory state of the kidneys as carries off this undissolved coagulable lymph which may afterwards be retained in some part of the urinary secretaries and occasion calculi.

After this hypothesis given on calculous concretions we proceed to the

Potentia Morbiferae Animato of Gaubius. He doth not consider this in an enlarged view with regard to contagions, but confines it almost solely to the case of Worms. The origin of these is still so much disputed, and their effects so difficult to explain that we shall pass over this subject altogether.

The next and last head of Potentia Nocentes is too obvious to need explanation.

We come next to the **Seminia** of Gaubius. A discussion of this point would take up too much of our time, and these Seminia act rather in inducing

inducing Predisposing causes, of which we have already spoke, than diseases. The vires nature Medicatrices has been sufficiently spoke of.

We come now therefore to consider that part treating of symptoms. Every change in the state of the body observable by Physician or Patient troublesome or permanent is what constitutes a disease. It seldom happens that the body is not changed in more than one part at the same time; the whole then is called the disease, the particulars the symptoms. There is nothing of more consequence in Physic than to discern the species & degrees of these symptoms, and particularly their concourse. The next thing to be wished is to assign them proper fixed terms generally allowed by all. For these 100 years past we have been much engaged in arranging the productions of nature which has been chiefly done by detecting their particular appearances and assigning them fixed terms. Until we have a proper Delineatio morbi in imitation of the Delineatio naturae we we shall never have a perfect nosologia Methodica. — When this is done it remains to adapt certain method of cure to each Species. We are here upon

upon a Dogmatical plan to mark the chief appearances in diseases, and to trace these up to the *Causa Proxima*. Oft in tracing the *Ratio Symptomatum* we come only to the last step of the Series of Causes and effects constituting the *Causa Proxima*. This *Ratio symptomatum* is not always to be obtained tho' frequently it is; but even where not to be obtained such an enquiry is of the greatest service since it leads to the Investigation of the species, degrees, & concourse of the symptoms and the Remote causes. It will bring out too several facts, for it must be observed that the chief facts in physic have been derived from Theoretical discussions. Gaubius divides this part into 3 heads. This division is by no means a good one, he himself gives up the *Secretorum vitia*. The *Qualitates sensibiles alienatae* might also be referred to the *actiones locorum*; but this would not be admitted without some dispute; we shall therefore consider them separately; they are such as cannot properly be referred to either of the other heads. Here would the enumeration above spoken of be difficult and our *Ratio symptomatum* principally fails. We shall consider only some of the chief, and first the
 (change)

Change of Colour.

This is very obvious & if it could be properly explained would be of great use. Colour is first of the Solids and particularly the Cuticle; this differs much in different climates and different persons. The theory of colours is little known so this must be a mystery. The original colour & density of the Solids with that of the transmitting forms the natural colour of the body. We can account for several changes of colour; thus 1st it may depend on the solids, or 2^d on the fluids. It may depend besides on the greater or less quantity of fluids, on fluids passing into vessels not their own; we would admit the Error Loci so far, as also the Error adiutorium. To mark now the chief changes of colour that do happen, and to show their connection with these causes.

The whiteness of the skin may be owing to the vessels not being properly filled. This may be owing to cold preventing the proper entrance of the fluids into the vessels or the action of Astringents. A diminished impulse of the heart and arteries will have the same effects; further Paleness may be owing to the fluids having now a smaller proportion of red globules; lastly, Paleness may arise from

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from paler fluids effused under the surface of the body as in Adematous swellings. The redness of the colour may be increased, first by the increased action of the heart and arteries. The change is still more remarkable when vessels not before red now get red globules transmitted thro' them. This is still greater when the impulse is directed to a particular part as in the fleshing of the Cheeks. Redness in particular parts will be increased by effusion of red blood under the surface. It is disputed whether the colour in Inflammation is owing to the first of these causes only or also to the last. Dissections show that this last sometimes takes place, but it is difficult to say when it does. I suspect that these Inflamm'ry tumors where much red blood is effused are most apt to turn to Gangrene; the fullness and deepness of the red blood will mark such effusion. This red colour frequently assumes a blue, purplish, or even blackish colour. The blue colour is the natural one of the Veins. An enlargement of the veins then increases the blue, purplish colour. If the blood is effused from the Arteries into the laxer cellular Membrane it will assume nearly the same colour as in the Veins, hence the colour of Ecchymosis. The skin appears black
from

from external causes. The leaden colour is a mixture of these darker colours with paleness. This is frequently owing to obstructions in the veins, arising perhaps from a weakened Impulse of the Arteries. The Liver in Gangrene may also be ashp towards the black colour appearing in Mortifications. There is also a yellowness oft observed in the skin. This may be owing either to the Bile or to Serum changed in its colour. The different colours of Serum is difficult to account for. It is attributed to its Alcalescence & probable that actual putrefaction gives it the green colour. It is difficult to say when yellowness is owing to Bile; that the serum may be thus changed should appear from hence that a yellowness has been observed in one half of the body. The yellow colour then in many instances is owing to serum either appearing thro' the vessels or effused. The concurring circumstances of relaxation of the solids must also be taken into account, thus we find it in the case of Poisons spreading from the part first affected. The green colour is frequently owing to a mixture of the yellow with blue. The Ecchymosis is at first a black colour from the quantity of Red blood poured out; afterwards a part of the red Globules being perhaps absorbed a yel-

low

= low or green colour succeeds.

We are now to observe the frequent changes of colour as alternate redness & paleness. This is a mark of the nervous power being affected & it seems to imply a muscular power acting on the small vessels. —

Dr. Gaubius next considers the Odours of the body, but has done this very imperfectly. Indeed we have never been able yet to reduce Odours to general heads. In the states of Odours there are great changes, the causes of which are out of the reach of our conjecture. — Passing over this we come to the Heat of the Body which we can better trace to its causes. We omitted this in the Physiology, and so shall supply it here tho' very briefly.

We must enquire into the causes of Animal heat. The nature of the generating power within us is much disputed nor do we know any probable Theory on the subject. With regard to the generation of heat in bodies we can observe that it is connected with an increase of motion in the parts of the body. There are two kinds of motion observed in other bodies and seem to take place in Animals too. One is Mechanical Motion depending on impulse, the other is intestine motion arising without external Impulse

Impulses in the parts of bodies. This last is of two kinds, one that takes place in mixture, and it is probable that every mixture generates heat. This has never been transferred to the Animal body both because this heat is not durable, and that we know no mixture regularly carried on in the Animal body & in such proportion as to answer the purposes here required. Another kind of intestine motion is that accompanying fermentation. These are less momentary and frequently during the whole process are generating heat. The fermentations in the Animal body may easily be supposed to subsist till they receive a fresh supply of matter; this has been frequently supposed as a cause of animal heat. Fermentation is observed to be going on in Animal bodies towards Putrefaction, & this in other bodies is attended with heat. It is true that the Putrefaction in Vegetables generates heat so as even to excite Inflammation, but several Physiologists have supposed this confined to vegetables and no exper^t to show that the same takes place in Animals. Even in the immense bulk of a Whale putrifying on the shore it is alledged that no great increase of heat takes place. Yet we must own that there appears

appears of heat in Animals too, but not till they arrive at nearly the last state of Putrefaction.

The Putrefaction too must be hurried on very fast and in large masses of matter; none of these circumstances happen in the Animal body. In dead bodies where putrefaction goes on to a much greater degree scarcely any sensible increase of heat is found. If we are right too in our notions of Secury we must add to this as an instance where the putrefaction is going on without increase of heat. In the most violent putrid fevers too it has been observed that the heat of the body was diminished tho' this was disputed; further, increased heat will be attended with increase of motion; how increased motion hastens putrefaction is not known except by increasing heat. In Inflammatory and putrid fevers the heat is rather in proportion to the increase of motion than of Putrefaction. From all these considerations the doctrine of Putrefaction is now almost entirely dropt. Almost all Physiologists have recourse to Mechanical Motions. This has been supposed to operate in two different ways either by the motion of the particles of blood on each other to which we know no analogous instance

in nature except perhaps in churning of Milk; but this is rather to be attributed to the fermentation going on than mechanical agitation. Dr. Haller asserts that water heats on motion, but has no authority for this. The other more received notion is attributing animal heat to the motions of the blood on the sides of the vessels. We have no analogy in nature to support this; two instances are adduced, one of a canon bullet which carried for Miles has still a great degree of heat which has been supposed to be owing to heat generated during its motion thro' the air; but we know other sources of heat here. But supposing it to receive heat thus this doth not apply to the animal body, for the velocity is so excessive that nothing like it can take place in our System — The other instance is in the case of Mercury, which being agitated in a vial indeed generates heat; but a circumstance happens here which has been overlooked, a portion is always changed to a dry powder, and it is to the attrition of this powder that the heat generated may be ascribed. This then is the attrition of solids on solids; but supposing that the Mercury acts thus whilst fluid still this doth not apply, as this is a fluid of such

such remarkable density. We know that the interposition of fluids between solids otherwise disposed to generate heat on attrition prevents this from taking place which is a strong objection to this doctrine. It is the same if we descend more minutely and have recourse to the particles of bodies returning the oscillations. It is necessary too that there should be an inequality of surface whereas our fluids are applied to a most polished surface. Further our red globules are not applied to dry surfaces, all the inner surface of the vessels being defended by humid exudations. Even in the supposition of Douglas concerning the attrition in capillaries the want of velocity here is an unsurmountable objection. But further this theory doth not solve the Phenomenon of Animal heat. One is the equality of heat in different parts; to account for this Dr Martin has shown great ingenuity in endeavouring to shew in like manner equality of Attrition. He attempts to prove that the surfaces and velocity taken together are always equal; but this fundamental hypothesis of his is without foundation. If we take two broad rules of wood, apply them by their edges and rub them

them on each other with great velocity, great heat will be generated. If we take these together and apply them by their broad surfaces together, diminishing ~~less~~ proportionally the velocity of the attrition, no heat will be generated. But without insisting on this there is not in animal bodies, a sufficient velocity of motion to account for the generation of heat even in the attrition of the solids; but supposing his hypotheses admissible his measures are fallacious; Nay they depend on false principles supposing the deviations to be always equal & that every trunk diminishes always in an equal ratio, we may conclude that the equality of attrition is by no means proved. But there seems to be no occasion for this to account for equality of heat since this may depend on its very sudden distribution; but the degrees of heat in different animals is not in proportion to the velocity of the circulation. Further the velocity is much greater in an infant than an adult whereas the heat is probably the same; it is true that in most instances the increase of heat attends increase of velocity, but it doth not follow that the one is the cause of the other. They may

may have their common cause, viz, the increased action of the vessels increasing the oscillations of the nervous power in the moving fibres. The equality of heat in different persons whether the motion is very different can more easily be accounted for on another supposition which we shall now proceed to explain.

We have nothing but conjecture to offer on this subject. Suppose that animal heat depends on the oscillations of the nervous power between the organs of sensation & the sensorium, and still more considerably between the Sensorium and moving fibres. This is agreeable to all our notions of heat which may be demonstrated to depend on the oscillations of a subtle fluid present in all matter.

Besides, there appears to be a particular mixture adhering to our medullary fibres. All fluids are non electrics & perhaps connectedly with them are unfit for the generation of heat. All dry bodies in which heat can be generated are electrics. This then confirms our supposition, we are still further confirmed in it from the remarkable effects of heat & cold on the nervous power.

Furtho)

Further if the Other of our Nerves necessarily
accompanies the Medullary fibre it will be a de-
terminate matter there; hence it will be the same
in Animals of the same species, which accounts for
the remarkable equality of heat. Tho' our Nervous
power is readily disposed to oscillations it doth not
without external Stimuli. The most common mo-
tions in our System are derived from its own
actions. This shows the connection of heat with
the Aterial system, and it will account for the
equality of heat in different parts if we take in the
ready communication of heat from one part to
another; hence the velocity of the circulation has
such influence on heat, viz, as this necessarily proves
a stimulus to the action of the vessels; hence we
may understand what Gauthier says of the causes
of increased heat. The nimis oleosa sanguinis Dia-
thesis seems absolutely without foundation, nor are
oily fluids from motion on each other more liable
to generate heat than any other matters. Amongst
all these causes only the first and last are to be
admitted, and these only so far as they increase the
action of the Solids. To add here one or two obser-
vations.

P. 4

The instances of partial heat and cold is better explained on this hypotheses than any other; thus whilst the hands are hotter than other parts this is accounted for from the increased determination to those parts, but if this heat on the Palms is greater than the internal heat it would seem that this was owing to the increased action of the vessels here generating new heat. Cold requires a different explanation. In this case we perceive the want of that oscillation which usually takes place in the nervous fibrile; further, we have alledged that with regard to this internal heat the generating power is increased in order to keep up a balance with the external air. Tho' we have sources of heat from external bodies colder than our internal heat yet the heat on the surface is not increased but by bodies at least as hot as our internal System.

The only remaining of Qualitates Sensibiles loss is the Magnitudo Acuta. Dr Faubius has pointed out all the causes of this, but without giving a proper Arrangement, we have therefore thrown the whole into a Table in order to show the whole in one point of view. Our business here is to consider

Tumors as connected with causes, and this we have done here. We might have made two general heads, 1st of Increased Solids, 2^d of Accumulated fluids, but thought this of ours more clear. On extraneous bodies we have not ventured on any subdivision, perhaps the chief of these are such as are generated in the body itself, the Vermes and Calculi. A particular Animal has lately been pointed out of such a structure that it by Absorption of fluids it can expand itself to a very considerable bulk, it is probable that this gives the Tumors called Hydatids. In the Prolapsus we have not in fact a Magnitude ~~acceta~~ always, but we have an increase of size in a part where it was not before. The Dr. head prevented our making the division to consist of two general heads. We have rather mentioned a few instances by way of Illustration than given the whole of them. Under Sarcoma we include all increase of the soft parts, this is a very general title comprehending a variety of Tumors. Sometimes it may be an organized increase, sometimes nothing besides cellular membrane. The Condyloma is properly the induration or calluses formed on the surface of the body. The
verruca

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Verruca has been confounded both with the
Condyloma and Sarcoma. The white swelling
is rather a fungus articuli, as Remarquis has
observed, than a dropsey of the joint as Sauvages
thinks, and therefore properly comes in here.
In the 5th head it is necessary to explain why we
here subjoin the term Nævus. This is of two kinds
either Moles or what are called Flesh marks, wh^{ch}
manifestly are depending on an increase of ve-
nous, we therefore gave it a place here. The Hy-
-datis Sauvag: means only distention of the lymph-
-atics. In the next head we have placed An-
-thrax, be' it rather comes under the 7th head. In
order to show the mixture of these we have em-
-ployed the term Ecchymosis in a more limited
sense than Gæbrius, confining it to effusion of
Blood. Petechia have been considered as a spe-
-cies of Exanthemata, but if they are such they
are not confined to any particular duration or
time like the other exanthemata. The Marices
are undoubtedly very often effusions of blood
into cellular membrane and not always simple
varices.

We have divided the head of fluids effused
according to the nature of the fluid. The serum

is further distinguished according as it is changed in its nature or not. When not unchanged it differs in the places in which it is effused. The Hygroma is the Synonym: of the Hydatis auctorum. Authors have not distinguished properly between Odema and Anasarca; thus in Odema which is purely topical independent of any general affection of the System, that Anasarca which depends on a general affection. Ascites is sometimes used by Authors for water collected in any cavity even in the cellular membrane, when the water is accumulated in any particular part of it, but commonly it is confined to the Accumulation of water in the Abdomen. Perhaps the Hydatis should come in here, but doest not assume it under the general head.— The 2^d Head of Serum is where it is effused in a condition to be converted into pus. whether it is always thus or only when it is disposed to wash off a part of coagulable lymph as is perhaps more probable.

We have next mentioned Air tho' with what propriety is not certain, yet in cases of Air getting into wounds and swelling up the whole body such an

an effusion of air seems to take place. Whether 193.
the rupture of aerial membranes may cause
Emphysema is not certain; have added Tympani-
ties here tho in a particular sense, understanding
by it the effusion of air into any of the cavities
of the body. The most common case of Tympanitis
is Tympanitis Intestinalis which is not properly
an effusion. Next follow the effusions into Cavi-
ties preternaturally formed by diseases. This con-
tains Encysted Tumours which is a difficult sub-
ject. The first division of these is according to the
fluid effused. Under Cystis Aquosa all encysted
dropesies are contained.

Our next term is improper owing to the hurry
in composing the table; the nature of the Bron-
choblast is not very certain. Some place it ~~and~~
in the Thyroid gland, but I have seen it begin
on the right or left side and not in the gland, & it
seems rather to be a tumour of the meatomatous
kind. Of the Gummata I cannot speak with
precision; it has been applied to nodes & exostoses
but is not confined to the bones. Astruc has given
a particular Idea of this matter. The Ganglion
is a Tumour in the Membranes & Tendons, con-
taining

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turning a glary matter which may be cut into without danger.

Next follow the effusions on the surface of the skin; of this kind too are Exudations in the Membranes lining the sides of cavities. We have not yet come to any concession about depræ, we mean by it here an exudation concreting into a crust. The proper Tenia is confined to exudations from bulbs of the Hairs as appears from the cure of it. The Achot is what is oft called Crusta Lactea. There are many concretions on the surface resembling this.

Next follows our 7th head. We distinguish this into two heads as they affect the soft or hard parts. The first of these is again divided into that with increased impetuous and without that. The first of these is Inflammation which we distinguish according to its seats into Phlegmon, Cryophilas and Rheumatism. The Inflammation of cellular Membrane seems accompanied with effusion of matter apt to form pus, whereas the Cryophilas is not. The Rheumatism too hardly ever terminates in suppuration unless Phlegmone supervenes. We have made several species of Phlegmone not so much from the parts distinct to particular functions as from their structure.

Theo

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The Turrunculus is an Inflammatory Bile attend-
ed with effusion of Serum. We should have mentioned
too the several species of Erysipelas, but know not
how to fit up this plan. We distinguished Phlegmon
and Erysipelas from their termination as well as
their seat, the former admitting of Suppurations
the latter not; but these two distinctions interfere,
whence their limits are not properly settled. To Rheu-
matism we have subjoined the Arthritis because
as an Inflammation it has the same seat; this
however doth not confound these two together. Next
follows the Schirius which we make an indolent
tumor. This term is not used with precision by
authors, some confining it to glands others employ-
ing it more generally as we have done. In the
Longlobate Glands the affection is more uniform
owing to some Acrid matter taken up by the Absorb-
ents and deposited in these. It would be proper to
mark all these by the general name of Bubo whatever
part they affect. The Scrophula is put down here
as being in all probability an affection of the lym-
phatic system. Under the next head we have men-
tioned as a curiosity the Parapleuritis, this has lately
been spoken of by an Italian physician as an attendant
of the true Pleuritis which leaves a Schirius behind
it

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it. With regard to the Exostosis we are not certain whether we are right in placing it in the Bones, we rather think with De Hamel that it most frequently arises in the Periosteum the layers of which afterwards harden into Bone; but in some cases the tumor is undoubtedly situated in the Bones themselves, this finishes the magnitudo Acta.

We think it proper to pass over the Secretorium-vitia with Gaubius both because they may be commonly referred to the Actiones Loco and that they more properly make a part of the Semiotics, further their rationale is not well understood. Passing over these we proceed to the Actiones Loco, a distribution of these is difficult, but the common division answers very well. He first divides them into such as are common for both sexes and such as are peculiar to either. The first we subdivide into Animal, Vital, and Natural, we cannot enter into a criticism upon these terms. The Animal functions are those in which the mind is affected by Impressions made on the body, or again the body is moved in consequence of some changes induced in the mind. The Vital functions are those immediately necessary to life. The Actions of the heart & lungs & of the Cerebrum as necessary to those are comprehended under this. The natural

natural functions are those intended to support the System as the Chylopoetic viscera, the system of Nutrition and the various Secretions. There are some questions which may perhaps be referred to more than one of these heads, but still it is not worth while to change this arrangement.

I shall begin with the Animal or the Organs of Sensation and Motion. There are certain general affections which cannot be easily referred to any particular organ, viz, Dolor & Anæstasis. I should wish to enter into a full discussion of these matters, but our time will not allow us to enter on it. In these simple perceptions we cannot expect a definition, but as pain is oft used metaphorically it is proper to limit its meaning. We before mentioned three degrees of disagreeable, uneasy, & painful; this last or bodily pain is what we are here to speak of. On what particular state of the body doth this depend? The causes seem to be all such matters as set the particles of the solid matter of our Nerves at a greater distance from each other or whatever threatens a dissolution of continuity. Gaubies allows of this, but thinks this doth not exhaust the whole. In the first place we see sharp points or edges are a principal means of producing pain. 2^d All modes of external impulse with a certain degree of force applied

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applied lengthen the fibre and therefore set the particles at a greater distance from each other. It is easy to apply this to other senses. Light & sound give pain only under a certain degree of force of Impulse. The same Theory may be admitted with regard to odours if we can distinguish between such as are painful and the others. Those which are painful are only such as are most volatile and therefore act with greater force of Impulse. In the 5th Sense of Taste there is some difficulty. The painful tastes are the Acrids and nothing more common than to suppose that Mechanical and Chemical Bonds are similar and act in the same manner. If this is admitted our System is complete. We may observe that the most remarkable Acrids are saline, and since these in concretion so readily admit an angular form this Theory is readily received. But we have before rejected this Theory and refused the transferring the notion of Mechanical to Chemical Acrids. The Doctrine of particles of the salts being angular is without foundation.

Dr Hooke has accounted for the Crystallization of water merely on the Supposition of its particles being Spherical; further, Salts non agent nisi soluti, Dr Haubiges tho' he admits this notion in general cannot

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cannot reconcile himself perfectly to it. Even Oils
are as considerable Acrids as Salts, and it would
be difficult to prove that Oils are of a Saline nature.
Menstrua are not to be considered as acting Me-
chanically, and it is now generally received that
this depends on Attraction; Because the O- dissolves
Silver we are not to conclude that its particles are
Angular or act as Wedges; there is no occasion here-
fore for us to transferr this to the Animal body -
Acrimony by its producing Solution of continuity
may be referred to the force of Impulse. But we
are inclined to go further and suppose that the hu-
mours of taste depends on the particular oscillations
of bodies designed to act on these Organs. This too
then is referred to the force of Impulse.

There still remains the Impressions of Heat & Cold.
That Heat sets the particles of all bodies at a great-
er distance is very obvious, but a particular illus-
tration arises from the case of Heat. Every change
of temperature from a lower to a higher degree gives a
sensation of Heat, tho' this is lower than the internal
heat; all the sensations of heat however are never
painful, and that because they never can have the
effect of expanding the solid matter till they exceed

the

the internal heat of the System. In cold we meet with great difficulties as this brings particles nearer together. May we say that a sense of cold is not the sensation of condensation but of the increased impetus of the blood on these constricted fibres? But we have not yet sufficiently digested our thoughts on this head, and must at present leave this problem. Besides solicitude of continuity Dr. Gaubius seems to adopt some other causes of pain. What he means by Tenson there we do not perfectly understand. We are averse to admit of these notions as they are rather Romantic and rather refer the Phænomena to the different modes of Impulsion acting as above mentioned. We may refer pain either to distension, or Spasm chiefly. We may add to this Chemical Acrimony, but this is topical and affects only the extremities of nerves. Dr. Gaubius here starts the notion of Dolor Imaginacionis. We don't know the facts in proof of it, and doubt of the doctrine even from the very circumstances adduced by him in proof of it, viz, Dreams and Deliriums. He says that we have the Idea of pain without the sensation of it; but before observed that the Memory cannot renew the Idea of pain, & if so internal affections cannot renew them as they renew only such as before were)

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were laid up in the memory. An important question
is to determine whether pain always arises from
Impressions on the Extremities of Nerves or sometimes
from Impressions directly made on the Sensorium
commune. Dr. Gaubius thinks that many Sensa-
tions may be renewed by Impressions on the Sensorium
commune, and among these pain. Even in Dreams
& Delirium sensations are not to be renewed but
by inducing the same state in the extremities of
Nerves. With regard to light and sounds can renew
sensations but less perfectly in the last case than
in light. In the other senses we don't find that we
can recollect or renew Odours or Tastes. We have
indeed a reminiscence, so that an Odour being present-
ed to us we can remember to have had it presented
to us before. If this was attended with any reflex
sensations the bare name of such Odour and Taste
will be attended with the same sensation & emotion.
So far it goes and no further. Even in Dreams and De-
liriums the Imagination is confined only to the ob-
jects of sight and Hearing, therefore we refuse that
there is any imaginary pain and that this must imply
a particular state in the Extremities of the Nerves; the
sensation then of pain whenever it occurs always im-
plies a change in the Extremities of Nerves. Most
other

other changes may consist in a difference of the oscillations solely; but pain seems to consist in a change of the state of the solid matter of the nerve. The mind always refers pain to some particular part but is not very accurate in doing this, or only with regard to the surface of the body; where it is of particular use to direct us to remove the hurtful impression. In other cases we refer the pain to the part very grossly as is plain in the instance of pain in the hypochondrium. We talk of rheumatism and gout as differing in the depth of their seat, whereas our sensations give us no precision in this respect. Investigating the place of pain is very important — Here is the place to enquire into ~~Lymphatic~~^h pains, that pain may be felt in other parts besides that in which the impression is made we acknowledge, but not on the common footing. Only in one case do we make a false relation to a part, as when the mind has long been in the habit of referring pain to an extremity of the nerve on which the impression was made. This is the noted Phenomena attending on amputation depending on the force of habit. Pains are sometimes felt not directly in the part in which the impression is made but in a different one. First we should have observed in speaking of distension as

a cause of Pain, that this may be from the Nervous power passing more copiously into a particular part, and which may perhaps account for Spasm.

In consequence of Oscillations propagated along continued Solids the pain may be felt at a distance from the place of Impression. Another case is when the Oscillation is freely propagated along continuous Membranes which transmitting it freely are attended with no considerable pain; but in parts where it is confined it produces pain, hence the cause of pain in Joints. Where parts are insensible tho' capable of Oscillation the pain may be felt at a distance from the place of the impression, hence the pain in the Glans penis from a stone in the Bladder. There is a 4th case where a membrane is only fixed at one extremity, the pain may be propagated along the Membrane to the part where it is more fixed; thus the pain in the shoulder from a Scurious liver may be accounted for. These seem to be the only cases of Sympathetic pains in our system.

In many cases an Idea excited in the Sensorium commune will produce the same state in the Extremities of Nerves with external impressions. This however is limited nor can the Idea of pain be renewed in the Sensorium and therefore cannot renew the state

(a) This seems to be a wise provision of Nature to prevent the fatal effects to the System that would otherwise on many occasions ensue.

state in the extremity of the nerve. Another thing
to be mentioned here. Pain is produced by various
Impressions, and these modify the sensation of pain
variously. Pains produced in the external surface
have a mode in some measure expressing the mode
of the external Impression; the question is whether
we can transferr this to the internal parts. Dr Halesius
is disposed to think that we may. This however is
very unsuitable to his former doctrine of Imaginary
pain. We would allow the fact tho' it is difficult-
ly reconciled to some parts of Theory. Dr Gauviers
next proceeds to mention the effects of pain. Pain first
acts as a Stimulus exciting the Nervous influx into
the part affected as also into the neighbouring parts
and so exciting the impetus of the blood in the
neighbouring vessels. Pain is further to be consider-
ed as an uneasy sensation of the mind, and in that
view it seems to be a general Stimulus. But we must
limit these Stimulant effects to pain in certain de-
grees, for beyond that it may produce fainting,^(a)
and if it was not for that would frequently produce
Death. Further, when pain has continued long in any
one part, as if it was accompanied with over distension,
the parts don't recover their former tone, but continue
flaccid. This view extricates the matter from the
confusion

and I will be pleased with it when
you can get Gurdjieff's book and communicate it to
myself privately with you and we understand
what you have in mind. I will give you
Gurdjieff's book when ever I have a chance
because he is writing all kinds of material
which I think will be very useful to you
in your work. Your work will be Gurdjieff's
material to you and you will be able to
understand him better and more easily.
I will send you his book as soon as I can.

Anxiety seems to be nothing else but a difficulty of
performing our Intellectual operations.

confusion in which it seems to lie in Gaubius. The pain is not always suitable to the M ^P

but it is to the force of the Impression and the Sensibility of the part and person affected. If a man has been shut up in the dark for sometime a moderate degree of light will affect him much from the Sensibility his eyes have acquired. There may be conditions giving a Sensibility to a part so as to occasion a sensation of pain at one time from the same Impressions, which dont at all another. This will explain some matters of dispute between Dr Galler and his adversaries.

We come now to the head of Anxietas, which we interpret by the name of Sickness. This however is synonymous to Disease, and must therefore be of great extent in Pathology; as a simple perception it cannot be defined. It undoubtedly arises from Internal Impressions which we dont always directly receive and dont refer to the part affected. We follow Dr Gaubius in first considering it as belonging to the Mind. It is there an uneasy propensity to remove a present or prevent an impending harm; or it is an uneasiness arising from the want of a certain object the means of which are wanting. When Fear gives Anxiety this is not to be considered as a disease since it doth not arise from a change in

in the state of the parts, but if a person estimated these fears much higher than they are in fact, this is a morbid anxiety arising from a change in the state of the Corporeal System. Anxiety is very apt to induce Passimilitude. — To trace the changes of the body.

When joined with inconsistency it is then a part of delirium and may be imputed to causes acting directly on the Sensorium. Again, when an imaginary Fear is single and not attended with other inconsistency, and particularly when no bodily symptoms occur then this makes the true Melancholia which seems to depend on a more partial affection of the Sensorium; but when this is attended with morbid symptoms in other parts and particularly the Alimentary Canal, this gives the Melancholia Hypochondriaca; this then depends on a different state in the extremities of Nerves. Gaubius assigns a very general cause here, Resistance to Excretions of all kinds. Some of the various species here introduced seem without foundation, others however are very proper. It is to be doubted here whether all these Molimina Secretaria may be supposed directly to produce this Sensation of Anxiety or rather some of them don't produce others more apparent

apparent causes of Anxiety.)

Such for instance is a difficult transmission of blood thro' the lungs giving difficult Respiration. Another cause of Anxiety is a Sense of Resistance to the transmission of blood thro' the heart; these are oft combined but sometimes separate. A 3^d cause of Anxiety is a difficult transmission of blood thro' the Abdominal viscera; we are not sensible of this as of the other two and rather infer it. A 4th head ought to be marked out and which seems omitted by Gaubius, this is that a sense of Anxiety very commonly depends on the state of the Stomach. This seems to be the cause to which the term sickness or Anxiety is most strictly applied. This sensation joins itself so frequently to the other that oft it may be doubted whether this is not the primary cause, and whether the others may not act in inducing this. In the first place there may be brought on by various matters thrown into the Stomach, as by all those matters which at last bring on Vomiting. It seems to be then that state of the Stomach immediately preceding Vomiting. Dr Gaubius in treating of Vomiting mentions the various remote causes of it, but nowhere touches the proximate cause of it which must

must be this very state we are enquiring into. 208.
It is reckoned sufficient to say that it depends on
Stimulus, but this instead of increasing the Peri-
staltic motion stops it or determines it upwards
by constricting and elevating the Pylorus. This is
attended at first with Anxiety afterwards with Vo-
miting. It is not therefore the Stimulus of Spee.
that produces the action of vomiting, but it produces
this state of the Stomach which is the proximate cause
of vomiting. we find all the same effects brought on
by causes not directly applied to the Stomach. This
state of the Stomach is connected with various other
parts of the body and this is accounted for by Symp-
athy on which we have before spoken. It is neces-
sary here to enquire how these different sympathies
can induce this state of the Stomach which induces
Anxiety. This subject we have before handled
and shall therefore proceed now to the next part
of Gaubius.

The Actiones Sensuum Externorum also
must be omitted for the same reasons here as in
Physiology, and so we proceed to the

Sensuum Internum Lassiones.

All these may be referred to Delirium. Concerning
this we have to mark its general nature, its degrees,

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and various causes. Delirium consists in a train
of Ideas not connected by or properly contrary to
their usual relation; but it may also consist in
false conclusions from impressions that do not ex-
ist or don't then act on us, therefore it very oft
consists in this that either real or imaginary Im-
pressions excite the passions of Fear or Anger in a
degree far beyond their proper force. From these views
there is some foundation laid for distinguishing
different species of delirium. There may be another
foundation from its different causes. It is but
seldom separated in fact into these different species
and more commonly it differs in degrees; when
it comes on by degrees it comes on usually thus,
with an impaired recollection with a difficult
transition of our Ideas; this gradually increases
to an involuntary train, but this without incon-
sistency. It then proceeds to the irregular transi-
tions in which it chiefly consists. If this continues
there is commonly the case of false Imagination
added, and this induces those violent passions w^{ch}
give the highest degree of Delirium. It may be
observed that Delirium commonly begins with
Dreams which seem to arise from the same causes
but in an inferior degree, or with a state between
Sleeping

Sleeping and waking. The application of all this, especially in fevers is very obvious.

To enquire now into the causes of Delirium. It is unnecessary to premise with Gaubius that it is in part corporeal tho' not entirely and only so far as it is so can we enquire into its causes. Nothing more absurd than the Stahlian doctrine about the independant actions of the mind. We shall referr the causes to 3 general heads which are

1. Internal Impressions having the effect of external, and so either interrupting the ordinary train or mixing themselves with it and thereby producing incon sistance. Such is increased impetus of the blood in the brain or particularly in some organ of sense as those of seeing and hearing whose Ideas are capable of being renewed. A curious case of this was a Lady who was particularly affected with the images of hobgoblins before her which gave her a disturbed mind; her Physician was present when she was thus seized and endeavoured to lay his hands on her Eyes, but he only covered one and yet the Hobgoblins disappeared; on repeating the Experiment and covering up this eye the Lady was cured of the false Imaginations which shows that they depended entirely on some fault of that Eye.

But

But further, pain and anxiety from various causes serve on many occasions to cause Incoherence in the train of thinking; this is very evident from the effects of uneasy postures in producing dreams. To this head it belongs to observe that if we have lost the command of our attention any new Impression will interrupt and disturb the ordinary train of thinking. There is an instance of a person whose delirium was highly increased by having his bed placed in a different part of the room and was cured by replacing it.

2. Interrupted communication between several parts of the Sensorium may occasion delirium—The affair of Memory seems to depend on a particular corporeal organ in the brain. Dissection however in many cases doth not discover any of these organic affections. Dr Gaubius's arrangement here would afford room for criticism, but our time doth not permit.

3. A resistance to the Influence of the Nervous power arising from the State of the Nerves themselves or from causes acting on their Extremities. We deduce this from hence that we explained sleep to arise chiefly from such a resistance. Need we

to add that many causes of Sleep act on being applied to the Extremities of Nerves, as Cold & Opium. Delirium thus distinguished by its causes is treated on 3 different Indications. The first is to diminish the increased Impulses and chiefly by blood letting. The 2^d is to restore the communication, this is very difficult and scarcely to be attempted. The 3^d is to overcome that resistance to the nervous power which contrary to the first is oft to be done by Stimuli. Blisters answer this end both as taking off Spasms from the Surface and as Stimulants; this demands our attention the management of delirium in advanced state of fevers being very difficult.

We proceed next to consider the affections of Motion. These equally apply to all the motions belonging to the 3 several functions. We here consider motion as confined to the Muscular fibres and in this review as offending in excess or defect. To these Gaubeus applies the terms Spasm and Palsy. The first of these is not used with precision it confounding proper Spasm with motio convulsiva. These are different species of the same genus. The Ambiguity that has occurred in Authors is not without some foundation. In the first place they seem

seem to differ only in degree, and spasm to be
only an increased degree of convulsion; They have
often too the same causes, still however they are
carefully to be distinguished since their effects
are very different. Convulsion increases the action
and all the effects of contraction, Spasm stops both.
It were to be wished that the different states of the
muscles under them could be explained. Convulsi-
on evidently depends on a greater influx of the
nervous power, so doth spasm, but why it goes
farther and is not disposed to remit depends on par-
ticular organization of the muscle with which we
are unacquainted. Several curious questions occur
here. Doth spasm occur in the heart? I am convin-
ced that it doth. I knew a gentleman subject to
frequent faintings more from exercise than Inini-
tion; he died in one of these, and on being opened
nothing like Polypia or Aneurysm was found, whence
we suppose that the heart is liable to spasm. Is
Spasm of different degrees? I am convinced that
there is and that several parts labour under a
greater degree of Tonic power but not going so far
as spasm.

Next we are to consider the causes of Spasm
we

We ascribe it to an increased influx of nervous power into muscular fibres. But we are to consider whether this is always derived from the Sensorium or is in consequence of Stimuli applied to Nerves in their course, as also whether something doth not depend here on the state of the muscle. In the ordinary case of Tremor it seems to depend on Atonia of the Muscles rather than any fault in the influx of the Nervous power.

Another consideration on this subject is that it is very common to refer the whole to Irritamenta or Stimuli or some impression that is the cause of Increased influx. But this is not always the case and it is oft entirely owing to increased Mobility. This is the proper Irritability of Dr. Gauvius. Thirdly, supposing no peculiar mobility in the whole System or particular parts there are some causes acting on the Sensorium alone others on the Muscular Organs, a 3^d set on the Nerves in their course. It is very difficult to refer the causes of excessive motion as Irritamenta to general heads, it must however be attempted. In the first place all Impressions of a great degree of force not only produce their proper motions with some velocity and force, but also the same sort of motions in

in the whole of the System. I would separate from these Impressions not acting as Stimuli, but by acting on the Sensorium produce a reaction of that as Cold, Spasm &c. Among the rest we may reckon whatever considerably weakens the Tonic power of the System; thus whatever weakens the action of the heart greatly and suddenly as fainting, successive evacuations &c is very apt to induce Spasm and Convulsion. In the next place from whatever cause all strong and long continued efforts tend to produce Spasm and Convulsion; still more remarkably all hurried efforts have this effect, more particularly they do this as attended with violent passions and emotions. The Nervous System is to be considered as equally balanced; to this purpose it is to be observed that many causes acting seemingly equally on the whole Sensorium affect one side of the body only. This points out that the two Hemispheres of the brain counterbalance each other so that the want of a proper Equilibrium between them directs the impression to a particular side; but habit will oft throw the balance too much on one side and therefore will give occasion to this effect. We must add to all this one especial cause of convulsion. Imitation. In studying this subject,

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subject we must always take into consideration the power of habit. Convulsive motions are easily repeated, readily become habitual, and will then be oft repeated when the original Impression is removed.

We are now to speak of Defect of Motion. Here we first confine ourselves to loss of Motion tho' under Paralysis loss of Sense is also oft comprehended. The motion of a muscle may be hindered either by the state of the Nervous power or by various organic affections in the structure of the Muscle. If from Odema the motion of a muscle is prevented we don't call this palsy which implies an affection of the proper moving powers; hence we throw out the 3^d general cause of Dr Gaubius as also the 2^d the state of the arterial circulation, for we know that this may be impaired for a very long time without affecting the motion of the Muscle. We consider Palsy as an affection of the Nervous System & we must therefore enquire for its causes. These are whatever prevents the communication by which the increased Nervous influx at every contraction is deriving to the Muscle, so far that the power of stimuli applied to the origin of the nerves or a part of the nerve superior to the place where the communication is intercepted, has no power of inducing contraction

contraction. The causes of this interruption we readily ascribe to pressure and very universally suppose this as the only cause; but there seem to be other causes arising from a particular state of the Sensorium, tho' what this is we don't know. We are indeed to think thus because Palsy oft remains after the compressing cause is removed as we should imagine from observing that these causes are not attended with other considerable affections as should be expected. How are we to explain this? We have formerly referred sleep to a particular state of the Nerves themselves. It is very probable that whilst compression may occasion this it may do it by that Collapsus fistulatum Nervearum we spoke of; further, we find Palsy most commonly cured by Stimuli. I must now add that there is reason to believe that there are various degrees of Palsy depending on particular compression. Dr Gauvius distinguishes Paralysis from Atonia in an ambiguous manner. We distinguish them on another foundation. Want or decay in Muscular fibres may depend on want of influx from the Sensorium or want of proper condition of the Muscles particularly Tension. To the first of these we apply the term Palsy to the latter Atonia. Some Ambiguity occurs here.

here, since we have before said that the Tension of the Muscles depend partly on the Nervous Influx. To be more clear we would say that when it is a fault of the tonic power, this may properly be called Atonia, other cases Paralyoia. We should next go on to another subject connected with this last, the Somni Affectiones. Of the 4 causes here assigned we cannot help remarking the last. Dr Gauvain has always referred to the Stahlian System, but seldom shows it, here however is a flight not inferior to any of theirs. This finishes the whole of the Symptoma Motuum Animalium.

We come now to consider the Symptomata motuum Vitalium, and shall with him begin with Symptomata Respirationis. Of the effects of Respiration we shall consider only difficult Respiration. This may be either in Inspiration or Expiration, but 1000 times in Inspiration for once in Expiration. Its causes we refer to 3 heads - 1. The condition of the Air. 2. The obstruction of the passages thro' wh^{ch} the Air enters the lungs. 3. The condition of the lungs themselves. The Air may be either too rare too warm or too dense, or what amounts to the same) too heavy. Having before spoken largely of the effects of Air on our bodies we don't need to say much on this

this subject. The Petrefaction of the Air is always to be taken in, nor can quantity alone suffice, hence too rare or too warm air allows the blood to be accumulated in the Lungs and so gives occasion to Asthma and particularly Hæmoptoe. Many difficulties occur here in all our reasoning with regard to the weight of the Air I don't believe that we shall ever feel the effects of too dense Air, with regard to the diving Bell we are not acquainted with the facts and leave it as a subject of enquiry.

The next head of causes will operate in delaying the transmission of the Air which is necessary to expand the Lungs. To give an observation here we have lately had an Epidemic Angina with Excretions on the fauces giving Sloughs and much Mucus. This has given a Stertor in breathing as of difficult breathing, but the sterter here occurred in Expiration more than Inspiration. This relieved our fears about the Glottis being affected by the swelling, and depended merely on the quickness of Expiration in comparison of Inspiration. The most general case of difficult Respiration is from the condition of the Lungs themselves, this we have divided into two cases perhaps not properly, for some

(a) Viz. what was before said de Nov. Atmosph. Potentia

some of the moving powers act in diminishing the proper capacity of the lungs. The first affection of the moving powers is Spasm or Constriction, and this is proper asthma in opposition to Dyspnoea. — The causes of this may be matters introduced in the air or other causes acting generally internally. Among these is cold, and this is the case of Asthmatics, who are most affected in winter. Perhaps we should have introduced here warm air, since many more Asthmatics are affected in summer than winter; but we did not do it chusing rather to referr it to the 3^d head of Internal causes. Of the Aer Inquinatus we have spoke before. We must own here that a great variety of Inquinamenta may give occasion to Asthmatic complaints tho' they do not in inducing diseases in general. We must here mention a particular Inquinamentum, Dust. A quantity of this must be taken into the lungs, and yet we find little mischief from it, it being usually detained in some part or other of the passages leading to the lungs.

In many cases however it doth not hurt us and Sauvages has very properly given a Dyspnoea Pulverulentum. In the 3^d place the Spasm may be induced by various internal causes acting either immediately on the lungs or on neighbouring parts. All

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the various Infarctions of the lungs following here may give occasion to Spasm; hence too rare air by preventing the proper transmission of the blood may occasion Spasm, [hence too rare air by preventing the proper transmissⁿ] of the powers acting on the Sensorium &c must referr to the study of Spasm and Convulsion.

The next head we have inserted on the Authority of Sauvages. I think the lungs may be affected with Palsy. In an Hæmiplegia the intercostals of one side one would expect to be affected and perhaps too one robe of the lungs; but in most cases of Hæmiplegia not only the lungs but intercostals are not affected in consequence as it should seem of the constancy of the vital motions, tho' on what this depends is not well known; we have seen cases where the lungs were also affected. It is doubtful whether we can admit the Diphœna Galenica of Sauvages. Here particularly is expiration affected, but without being attended with any great inconvenience. We would observe on this that there may be degrees of Palsy, thus the Respiration is rendered more slow in several comatose states and sometimes almost entirely stopt; various other causes of debility in general affect Respiration, hence all weak

weak persons cannot bear sudden motion they not
being able to transmit the blood as fast as it is
sent to them. This seems to be the case in the dyspnoea
Scorbuticorum. We have added a 4th head of which
we have instances in Pleurisy and Peripneumonia;
as also in Hepatitis &c. We come now to the 2^d head
of causes which we have again divided into ob-
struction of the lungs themselves and compression
without them. This is not proper if the term obstruc-
tion is used in the sense we before gave it. By
it here we mean the Epus^{εύπυστος} of Gaudioes. The sub-
divisions belong properly to the head of obturatio
and are of three kinds. The first is of humor effused
into the Bronchia, Gaudioes in enumerating the fluids
that may be effused, mentions the Serria, Polypora,
Podagraria &c. But we know nothing either of the
cases of these or of their possibility. With regard to the
2^d head we must observe that it is connected with a
case which we have not touched here. I imagine
that it is rather an effusion or concretion than con-
gestion. Dr Haaw gives a case of a matter spit up of
the exact figure of the Trunk and branches of the
bronchia. Of the next head the first subdivision is
Plethora. I would wish to have added Obesity, but
this

this and Plethora have the same effects. It is to be observed that Independant of general Pethora or there is oft a topical accumulation in the lungs as in the cold fit of all fevers. The 2^d head requires no comment. The 3^d would have admitted of further subdivision as it comprehends the noted case of Tuberles. Viscaria may be understood to be a consequence of this and the Inflammatory State. By the first instance of compression here given we meant to express a case which lately occurred to us of a humour as large as an hen's egg found at the divarication of the Trachea. The proper instance of the second is the Hydrocephalus Pericardii. The proper cases of the 4th are Empyema & Hydrothorax. The instances of Conformatio Mala may be found in Sauvages under his Dyspnoea Rachitica. Must observe of this here that Sauvages has multiplied his species far beyond what is necessary which particularly appears in this case of Dyspnoea which is very seldom a primary affection, yet is divided into a great number of species by him.

We proceed now to the next head of Gaubius. There is no occasion to treat here of Palpitation and tremor, for they cannot be understood but from the doctrine of Spasm of which this is the best illustration

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-tration. We proceed to another symptom of the Cordis Motus, viz, Arteriarum Pulsus. Shall enter here into the nice distinctions of our Systematics on this head. We shall consider first the state of frequency of the Pulse.

We must here premise that we consider only properly the action of the ventricles of the Heart, which are synchronous, so that whatever acts on the same brings the other into consent. The action of the ventricles depends either on the Influx of venous blood or influx of Nervous power. It is not necessary to determine whether at every contraction a fresh influx is sent from the Sensorium or the Tonic power in the muscles is sufficient.

1. With regard to the venous blood it is obvious that this is the chief and ordinary stimulus to the Heart's contraction, and therefore if poured more quickly into the Heart the heart's contraction will be quickened, hence muscular exercise or quickened respiration will increase the frequency of the Pulse, so will whatever quickens the general circulation. This will depend much on the proportion of the system of vessels to the heart itself, and to this may we refer the difference of frequency of pulse in different

different ages. The velocity of the venous blood being given if any cause prevents the entire emptying the ventricles this will occasion the venous blood to file the heart sooner and so quicken the contraction. This may be of two kinds first the weakness of the ventricles from any cause, hence it is in part that a weak and frequent pulse are so often combined. The 2^d is any resistance in the larger vessels from Polypus, Spasm &c. This resistance is more frequent to the right ventricle from the various obstructions in the lungs, and from the various modifications of Coughing, laughing &c. These however act in a double way since they also impede the motion of the venous blood. It is probably to obviate these causes that the right ventricle is larger than the left. We come now to the 2^d cause of frequent contraction the state of the nervous power. This depends, first, on the heart's irritability. we may observe that wherever we find general Irritability of the system there is commonly a quickened pulse. whether this is always connected with general Irritability of the system is not certain. The state of the Tonic power may be opposed to irritability, hence we may explain the

(a) It is ambiguous whether these are to be referred to
Nervous Influx or to Sonic Power only.

the slowness of pulse in persons otherwise strong
and healthy. As firmness of Tonic power thus
gives a slow pulse, Atonia must quicken contrac-
tion. This it doth, first by giving Irritability. By
this increased irritability from Atonia and also
by its preventing the proper depletion of the
ventricles it gives a quickened pulse, yet in
some cases Atonia seems to go the length of
Torpor and Insensibility. Tho' Atonia then may
be considered as residing in the muscular fibres
yet it is connected with the energy of the Sensori-
um. (The several passions of the mind give a
strong proof of this. These are the effects of the state
of the Tonic power. Now to speak of such as are
to be referred to its influx; among these are Stimuli
applied to the heart itself. It is to be en-
quired here whether there are any such peculiar
stimuli, and what they are. Heat is commonly rech-
oned such, but, as it should seem, improperly.—
For supposing heat generated elsewhere yet from
communication it can have little effect. But every
increase of heat in the system must in general
prove a stimulus and excite frequent constriction.
Another supposed stimulus is intestine motion of
our

of our fluids. There may be such but a very quick ones and not capable of stimulating the heart or vessels; at best it is quite hypothetical. When this and frequency of pulse are combined they both probably depend on the same causes. If this has such effects it may be from matter generated thereby. This leads to the third supposition of stimulus from various acrid matters either brought from without or generated within the body. We must observe of this that this is one of the possible suppositions tho' not very probable, or allowing its probability we scarce know when these stimuli operate. There is always present in our Masses of blood acrid matter which affects various secretions, but this doth not affect the circulation, which leads to the supposition that the Inner coats of vessels are not so very sensible. Acrimony is also oft present of a natural kind but in a much higher degree without affecting the circulation, so we before instanced in the case of urine or urinous matter circulating in the Masses of blood as also of Bile without affecting the action of the Heart or vessels. In the Scurvy the Blood is in a very acrid state, but oft there is no fever here present. we conclude

conclude then that it is very doubtful what degree
of Acrimony can stimulate the heart and there-
fore when this case can have place. We common-
ly suppose that Pus absorbed brings on fever and
that by stimulating the heart. It is not altogether
without reason since the exacerbation of this
fever observe the two natural diurnal Paroxysms.
But in opposition to this we find Pus off present
in the blood without any such effect. This instance
of Pus too is ambiguous; for first, there is an inflam-
matory state then present. 2. Increasing the natu-
ral exacerbations it acts like all the other direct
causes of fever by bringing on a cold fit so that
it doth not seem to act as a direct stimulus to the
heart. It is alledged that many chemical Aerids
irritate the heart, but it is doubtful how & in what
quantity they can arrive at the heart. Most of them
are such as become inert on diffusion and therefore
can have no effect this way. If any Aerid matter
then doth act directly as a stimulus to the heart in
any case it must be very rarely, we shall rather
find that Aerid matters act by exciting pain &
inflammation in other parts, and in consequence
of that exciting the action of the heart. Such seems
to

to be the action of Cantharides. On the whole then the doctrine of direct Stimuli is in a great measure to be deserted. We must therefore next consider the Indirect Stimuli. These are of two kinds, first, such as may be supposed to act by direct impulse exciting the nervous influence to all parts of the body and particularly to the heart, and 2^dly such as act by exciting fever which we have before shown to arise otherwise than by direct impulse.

We must now observe that the particulars are difficult of arrangement in these classes. The first difficulty occurs with regard to Sedatives proving stimuli to the heart's action. We before offered a Theory to explain this, or independant of that every Sedative may contain stimulating matter; if so they will come under direct impulse; but if we admit another supposition that they only prove stimuli by exciting the reaction of the Sensorium they should be rather referred to this head. Another difficulty is whether stimulus exciting Inflammation always acts by direct impulse or in exciting the causes of Fever. After this to give the particulars of the first class reduced under a few general heads. In general all

things as violently touch the skin with
some heat will burn the skin and cause
it to excrete. Such violent and violent
heat & friction and pain in the body itself which
cannot be removed till cooling which tends
to cool the body, the violent & violent
violent cooling which we have. It has
been observed when the body is much cooled which

(a) we say will prove stimuli; here, because we only
know this sometimes from experience of their effects, then
it happens in the case of purgatives which will some-
times produce Inflammation if long applied tho' we
may be insensible of their operation

all Impressions so far as they produce ^{direct} Sensation,
in opposition to reflex sensation, prove a Stimulus, as light, noise, &c. These in particular
are oft Stimuli merely by their novelty, in other
cases by the force of Impression. 2. Various reflex
sensations as attended with pleasure or pain
Desire or Aversion prove Stimuli; pleasure, bodily
pain, & desire may in general be reckoned Stimuli. The sedatives are to be found in the
uneasy and disagreeable Impressions & those
exciting aversion. All such as do or will ~~excite~~
inflammation in the part to which they are
applied prove Stimuli. The purgatives by their
operation prove Stimuli & by their effects only
discover this. Lastly sedative Impressions in
their first operation. Of the 2^d set of Stimuli pro-
ducing Fever, they are Contagion, Cold, Fear,
Hæmorrhage, Malimina and febrile congestions.
This gives the whole of the causes respecting the
frequency of the Pulse. The other considerations
respecting different states of the pulse we chose
to pass over. We are inclined to admitt of the
distinction between the pulsus Celer and frequans.

Another

Another view of the pulse as Intermittent or
Regular. This will be the whole of Palpitation
to be referred to the doctrine of Spasm & Convulsion.

With this we finish our observations on
Pathology, and we shall now proceed to our 3^d
part viz, Methods Medendi.

Finis.

